

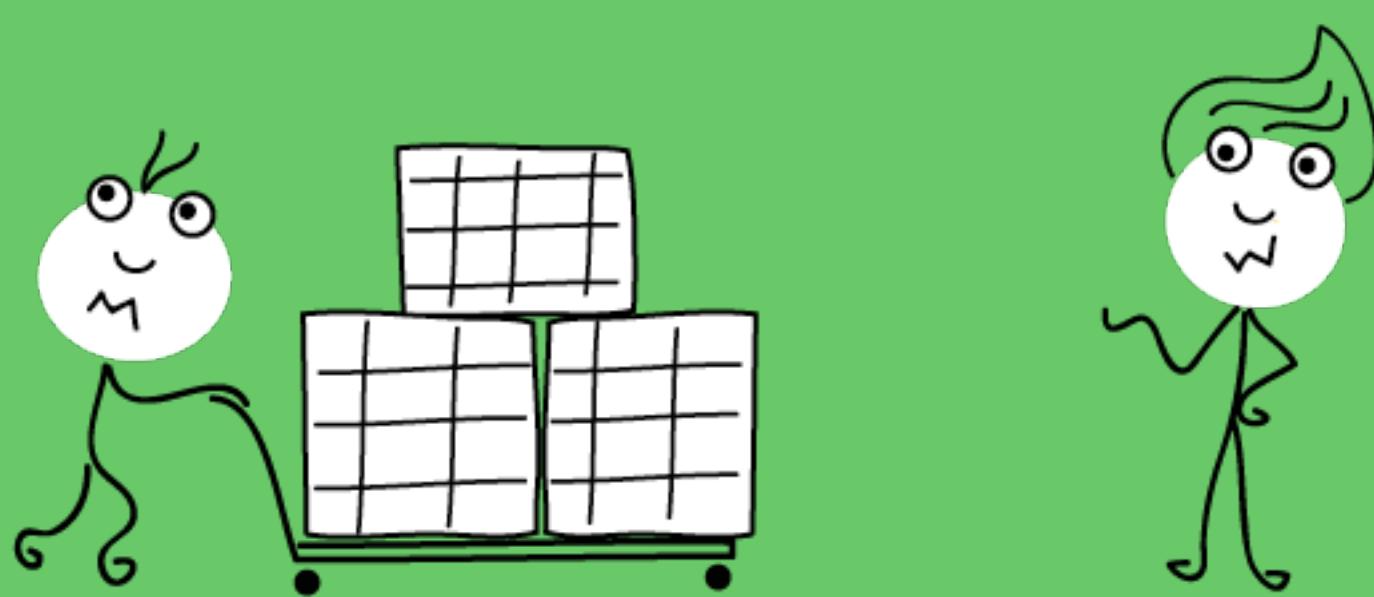
ZERODHA

---

# Introduction to Stock Markets

---

[ZERODHA.COM/VARSITY](https://zerodha.com/varsity)



## TABLE OF CONTENTS

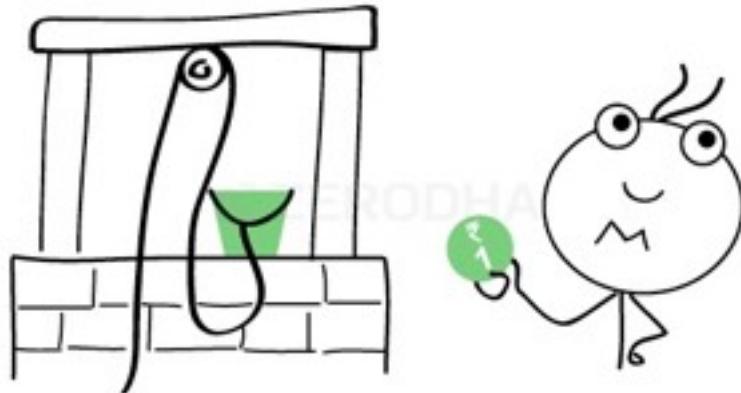
<b>1</b>	<b>The Need to Invest</b>	<b>1</b>
1.1	Why should one invest	1
1.2	Where to invest	3
1.3	Fixed income instruments	5
1.4	Equity	5
1.5	Real estate	6
1.6	Commodity - Bullion	6
1.7	A note on investments	7
1.8	What are the things to know before investing	7
<b>2</b>	<b>Regulators</b>	<b>9</b>
2.1	What is a stock market?	9
2.2	Stock market participants and the need to regulate them	10
2.3	The Regulator	11
<b>3</b>	<b>Financial Intermediaries</b>	<b>15</b>
3.1	Overview	15
3.2	The Stock broker	16
3.3	Depository and Depository Participants	17
3.4	Banks	18
3.5	NSCCL and ICCL	18
<b>4</b>	<b>The IPO Markets - Part 1</b>	<b>21</b>
4.1	Overview	21
4.2	Origin of a business	21
<b>5</b>	<b>The IPO Markets - Part 2</b>	<b>32</b>
5.1	Overview	32

5.2	Why do companies go public	33
5.3	Merchant bankers	34
5.4	IPO sequence of events	35
5.5	What happens after the IPO	36
5.6	Few IPO Jargons	36
5.7	Recent IPO's in India	37
<b>6</b>	<b>The Stock Markets</b>	<b>40</b>
6.1	Overview	40
6.2	What really is the stock market ?	41
6.3	What moves the stock ?	42
6.4	How does the stock get traded ?	44
6.5	What happens after you own a stock ?	45
6.6	A note on the holding period	45
6.7	How to calculate returns ?	46
6.8	Where do you fit in ?	47
<b>7</b>	<b>The Stock Markets Index</b>	<b>50</b>
7.1	Overview	50
7.2	The Index	51
7.3	Practical uses of the Index	51
7.4	Index construction methodology	53
7.5	Sector specific indices	57
<b>8</b>	<b>Commonly used Jargons</b>	<b>59</b>
<b>9</b>	<b>The Trading Terminal</b>	<b>65</b>
9.1	Overview	65

9.2	The Login Process	66
9.3	The Market Watch	66
9.4	Buying a stock through the trading terminal	69
9.5	The order book and Trade book	71
9.6	The Bid and Ask price	75
9.7	Conclusion	77
<b>10</b>	<b>Clearing and Settlement process</b>	<b>79</b>
10.1	Overview	79
10.2	What happens when you buy a stock	80
10.3	What happens when you sell a stock	82
<b>11</b>	<b>Five corporate actions and its impact on stock prices</b>	<b>84</b>
11.1	Overview	84
11.2	Dividends	85
11.3	Bonus Issue	86
11.4	Stock split	87
11.5	Rights issue	88
11.6	Buyback of shares	88
<b>12</b>	<b>Key Events and Their Impact on Markets</b>	<b>91</b>
12.1	Overview	91
12.2	Monetary policy	92
12.3	Inflation	93
12.4	Index of Industrial Production	94
12.5	Purchasing Manager index	95
12.6	Budget	95
12.7	Corporate Earnings Announcement	96

<b>13</b>	<b>Getting started</b>	<b>99</b>
13.1	So many modules - how are they interrelated	100

# The Need to Invest



## 1.1 - Why should one Invest?

Before we address the above question, let us understand what would happen if one choose not to invest. Let us assume you earn Rs.50,000/- per month and you spend Rs.30,000/- towards your cost of living which includes housing, food, transport, shopping, medical etc. The balance of Rs.20,000/- is your monthly surplus. For the sake of simplicity, let us just ignore the effect of personal income tax in this discussion.

1. To drive the point across, let us make few simple assumptions.
2. The employer is kind enough to give you a 10% salary hike every year
3. The cost of living is likely to go up by 8% year on year
4. You are 30 years old and plan to retire at 50. This leaves you with 20 more years to earn
5. You don't intend to work after you retire
6. Your expenses are fixed and don't foresee any other expense
7. The balance cash of Rs.20,000/- per month is retained in the form of hard cash

Going by these assumptions, here is how the cash balance will look like in 20 years as per Table 1.1

Table 1.1 - Total cash balance in twenty years

If one were to analyze these numbers, you would soon realize this is a scary situation to be in.

Years	Yearly income	Yearly expense	Cash retained
1	600,000	360,000	240,000
2	6,60,000	3,88,800	2,71,200
3	7,26,000	4,19,904	3,06,096
4	7,98,600	4,53,496	3,45,104
5	8,78,460	4,89,776	3,88,684
6	9,66,306	5,28,958	4,37,348
7	10,62,937	5,71,275	4,91,662
8	11,69,230	6,16,977	5,52,254
9	12,86,153	6,66,335	6,19,818
10	14,14,769	7,19,642	6,95,127
11	15,56,245	7,77,213	7,79,032
12	17,11,870	8,39,390	8,72,480
13	18,83,057	9,06,541	9,76,516
14	20,71,363	9,79,065	10,92,298
15	22,78,499	10,57,390	12,21,109
16	25,06,349	11,41,981	13,64,368
17	27,56,984	12,33,339	15,23,644
18	30,32,682	13,32,006	17,00,676
19	33,35,950	14,38,567	18,97,383
20	36,69,545	15,53,652	21,15,893
		Total Income	17,890,693

Few things are quite startling from the above calculations:

1. After 20 years of hard work you have accumulated Rs.1.7 Crs.
2. Since your expenses are fixed, your lifestyle has not changed over the years, you probably even suppressed your lifelong aspirations – better home, better car, vacations etc
3. After you retire, assuming the expenses will continue to grow at 8%, Rs.1.7 Crs is good enough to sail you through roughly for about 8 years of post retirement life. 8th year onwards you will be in a very tight spot with literally no savings left to back you up.

What would you do after you run out of all the money in 8 years time? How do you fund your life? Is there a way to ensure that you collect a larger sum at the end of 20 years?

Let's consider another scenario as per Table 1.2 in the following page where instead of keeping the cash idle, you choose to invest the cash in an investment option that grows at let's say 12% per annum. For example – in the first year you retained Rs.240,000/- which when invested at 12% per annum for 20 years yields Rs.2,067,063/- at the end of 20th year.

With the decision to invest the surplus cash, your cash balance has increased significantly. The cash balance has grown to Rs.4.26 Crs from Rs.1.7 Crs. This is a staggering 2.4x times the regular amount. This translates to you being in a much better situation to deal with your post retirement life.

Now, going back to the initial question of why invest? There are few compelling reasons for one to invest..

1. Fight Inflation – By investing one can deal better with the inevitable – growing cost of living – **generally referred to as Inflation**
2. Create Wealth – By investing one can aim to have a better corpus **by the end of the defined time period**. In the above example the time period was upto retirement but it can be anything – children's education, marriage, house purchase, retirement holidays etc
3. To meet life's financial aspiration

## 1.2 - Where to invest?

Having figured out the reasons to invest, the next obvious question would be – Where would one invest, and what are the returns one could expect by investing.

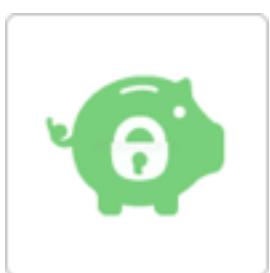
When it comes to investing one has to choose an **asset class** that suits the individual's risk and return temperament.

Table 1.2 - Cash invested at 12% per annum

Years	Yearly income	Yearly expense	Cash retained	Retained Cash Invested @12%
1	600,000	360,000	240,000	20,67,063
2	6,60,000	3,88,800	2,71,200	20,85,519
3	7,26,000	4,19,904	3,06,096	21,01,668
4	7,98,600	4,53,496	3,45,104	21,15,621
5	8,78,460	4,89,776	3,88,684	21,27,487
6	9,66,306	5,28,958	4,37,348	21,37,368
7	10,62,937	5,71,275	4,91,662	21,45,363
8	11,69,230	6,16,977	5,52,254	21,51,566
9	12,86,153	6,66,335	6,19,818	21,56,069
10	14,14,769	7,19,642	6,95,127	21,58,959
11	15,56,245	7,77,213	7,79,032	21,60,318
12	17,11,870	8,39,390	8,72,480	21,60,228
13	18,83,057	9,06,541	9,76,516	21,58,765
14	20,71,363	9,79,065	10,92,298	21,56,003
15	22,78,499	10,57,390	12,21,109	21,52,012
16	25,06,349	11,41,981	13,64,368	21,46,859
17	27,56,984	12,33,339	15,23,644	21,40,611
18	30,32,682	13,32,006	17,00,676	21,33,328
19	33,35,950	14,38,567	18,97,383	21,25,069
20	36,69,545	15,53,652	21,15,893	21,15,893
<b>TOTAL CASH AFTER 20 YEARS</b>				<b>4,26,95,771</b>

An asset class is a category of investment with particular risk and return characteristics. The following are some of the popular assets class...

1. Fixed income instruments
2. Equity
3. Real estate
4. Commodities (precious metals)



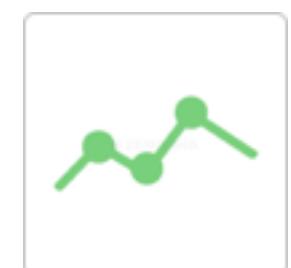
## Fixed Income Instruments

These are investable instruments with very limited risk to the principle and the return is paid as an interest to the investor based on the particular fixed income instrument. The interest paid, could be quarterly, semi-annual or annual intervals. At the end of the term of deposit, (also known as maturity period) the capital is returned to the investor.

Typical fixed income investment includes:

1. Fixed deposits offered by banks
2. Bonds issued by the Government of India
3. Bonds issued by Government related agencies such as HUDCO, NHAI etc
4. Bonds issued by corporates

As of June 2014, the typical return from a fixed income instrument varies between 8% and 11%.



## Equity

Investment in Equities involves buying shares of publicly listed companies. The shares are traded both on the Bombay Stock Exchange (BSE), and the National Stock Exchange (NSE).

When an investor invests in equity, unlike a fixed income instrument there is no capital guarantee. However as a trade off, the returns from equity investment can be extremely attractive. Indian Equities have generated returns close to 14% – 15% CAGR (compound annual growth rate) over the past 15 years.

Investing in some of the best and well run Indian companies has yielded over 20% CAGR in the long term. Identifying such investments opportunities requires skill, hard work and patience.

You may also be interested to know that the returns generated over a long term period (above 365 days, also called long term capital gain) are completely exempted from personal income tax. This is an added attraction to investing in equities.

## Real Estate



Real Estate investment involves transacting (buying and selling) commercial and non commercial land. Typical examples would include transacting in sites, apartments and commercial buildings. There are two sources of income from real estate investments namely – Rental income, and Capital appreciation of the investment amount.

The transaction procedure can be quite complex involving legal verification of documents. The cash outlay in real estate investment is usually quite large. There is no official metric to measure the returns generated by real estate, hence it would be hard to comment on this.

## Commodity – Bullion



Investments in gold and silver are considered one of the most popular investment avenues. Gold and silver over a long-term period has appreciated in value. Investments in these metals have yielded a CAGR return of approximately 8% over the last 20 years. There are several ways to invest in gold and silver. One can choose to invest in the form of jewelry or Exchange Traded Funds (ETF).

Going back to our initial example of investing the surplus cash it would be interesting to see how much one would have saved by the end of 20 years considering he has the option of investing in any one – fixed income, equity or bullion. By investing in fixed income at an average rate of 9% per annum, the corpus would have grown to Rs.3.3 Crs

1. By investing in fixed income at an average rate of 9% per annum, the corpus would have grown to Rs.3.3 Crs
- 2. Investing in equities at an average rate of 15% per annum, the corpus would have grown to Rs.5.4 Crs**
3. Investing in bullion at an average rate of 8% per annum, the corpus would have grown to Rs. 3.09 Crs

Clearly, equities tend to give you the best returns especially when you have a multi – year investment perspective.

## A note on investments

Investments optimally should have a strong mix of all asset classes. It is smart to diversify your investment among the various asset classes. The technique of allocating money across assets classes is termed as ‘Asset Allocation’.

For instance, a young professional may be able take a higher amount of risk given his age and years of investment available to him. Typically investor should allocate around 70% of his investable amount in Equity, 20% in Precious metals, and the rest in Fixed income investments.

Alongside the same rationale, a retired person could invest 80 percent of his saving in fixed income, 10 percent in equity markets and a 10 percent in precious metals. The ratio in which one allocates investments across asset classes is dependent on the risk appetite of the investor.

### 1.3 - What are the things to know before investing

Investing is a great option, but before you venture into investments it is good to be aware of the following...

1. Risk and Return go hand in hand. Higher the risk, higher the return. Lower the risk, lower is the return.
2. Investment in fixed income is a good option if you want to protect your principal amount. It is relatively less risky. However you have the risk of losing money when you adjust the return for inflation. Example – A fixed deposit which gives you 9% when the inflation is 10% means you are net net losing 1% per annum. Fixed income investment is best suited for ultra risk averse investors
3. Investment in Equities is a great option. It is known to beat the inflation over long period of times. Historically equity investment has generated returns close to 14-15%. However, equity investments can be risky
4. Real Estate investment requires a large outlay of cash and cannot be done with smaller amounts. Liquidity is another issue with real estate investment – you cannot buy or sell whenever you want. You always have to wait for the right time and the right buyer or seller to transact with you.
5. Gold and silver are known to be a relatively safer but the historical return on such investment has not been very encouraging.

---

## Key takeaways from this chapter

1. Invest to secure your future
2. The corpus that you intend to build at the end of the defined period is sensitive to the rate of return the investment generates. A small variation to rate can have a big impact on the corpus
3. Choose an instrument that best suits your risk and return appetite
4. Equity should be a part of your investment if you want to beat the inflation in the long run



# Regulators



## 2.1 - What is a stock market?

- Investing in equities is an important investment that we make in order to generate inflation beating returns. This was the conclusion we drew from the previous chapter. Having said that, how do we go about investing in equities? Clearly before we dwell further into this topic, it is extremely important to understand the ecosystem in which equities operate.

Just like the way we go to the neighborhood kirana store or a super market to shop for our daily needs, similarly we go to the stock market to shop (read as transact) for equity investments.

Stock market is where everyone who wants to transact in shares go to. Transact in simple terms means buying and selling. For all practical purposes, you can't buy/sell shares of a public company like Infosys without transacting through the stock markets.

The main purpose of the stock market is to help you facilitate your transactions. So if you are a buyer of a share, the stock market helps you meet the seller and vice versa.

Now unlike a super market, the stock market does not exist in a brick and mortar form. It exists in electronic form. You access the market electronically from your computer and go about conducting your transactions (buying and selling of shares).

Also, it is important to note that you can access the stock market via a registered intermediary called the stock broker. We will discuss more about the stock brokers at a later point.

There are two main stock exchanges in India that make up the stock markets. They are the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE). Besides these two exchanges there are a bunch of other regional stock exchanges like Bangalore Stock Exchange, Madras Stock Exchange that are more or less getting phased out and don't really play any meaningful role anymore.

## 2.2 - Stock Market Participants and the need to regulate them

The stock market attracts individuals and corporations from diverse backgrounds. Anyone who transacts in the stock market is called a market participant. The market participant can be classified into various categories. Some of the categories of market participants are as follows:

- 1. Domestic Retail Participants** – These are people like you and me transacting in markets
- 2. NRI's and OCI** – These are people of Indian origin but based outside India
- 3. Domestic Institutions** – These are large corporate entities based in India. Classic example would be the LIC of India.
- 4. Domestic Asset Management Companies (AMC)** – Typical participants in this category would be the mutual fund companies such as SBI Mutual Fund, DSP Black Rock, Fidelity Investments, HDFC AMC etc.
- 5. Foreign Institutional Investors** – Non Indian corporate entities. These could be foreign asset management companies, hedge funds and other investors

Now, irrespective of the category of market participant the agenda for everyone is the same – to make profitable transactions. More bluntly put – to make money.

When money is involved, human emotions in the form of greed and fear run high. One can easily fall prey to these emotions and get involved in unfair practices. India has its fair share of such twisted practices, thanks the operations of Harshad Mehta and the like.

Given this, the stock markets need someone who can set the rules of the game (commonly referred to as regulation and compliance) and ensure that people adhere to these regulations and compliance thereby making the markets a level playing field for everyone.

## 2.3 - The Regulator

In India the stock market regulator is called **The Securities and Exchange board of India** often referred to as SEBI. The objective of SEBI is to promote the development of stock exchanges, protect the interest of retail investors, regulate the activities of market participants and financial intermediaries. In general SEBI ensures...

1. The stock exchanges (BSE and NSE) conducts its business fairly
2. Stock brokers and sub brokers conduct their business fairly
3. Participants don't get involved in unfair practices
4. Corporate's don't use the markets to unduly benefit themselves (Example – Satyam Computers)
5. Small retail investors interest are protected
6. Large investors with huge cash pile should not manipulate the markets
7. Overall development of markets

Given the above objectives it becomes imperative for SEBI to regulate the following entities. All the entities mentioned below in Table 2.1 are directly involved in the stock markets. A malpractice by anyone of the following entities can disrupt what is otherwise a harmonious market in India.

SEBI has prescribed a set of rules and regulation to each one of these entities. The entity should operate within the legal framework as prescribed by SEBI. The specific rules applicable to a specific entity are made available by SEBI on their website. They are published under the 'Legal Framework' section of their site.

Table 2.1 - Regulators in India

Entity	Example of companies	What do they do?	In simpler words
Credit Rating Agency (CRA)	CRISIL, ICRA, CARE	They rate the credit worthiness of corporate and governments	If a corporate or Govt entity wants to avail loan, CRA checks if the entity is worthy of giving a loan
Debenture Trustees	Almost all banks in India	Act as a trustee to corporate debenture	When companies want to raise a loan they can issue debenture against which they promise to pay an interest. These debentures can be subscribed by public. A Debenture Trustee ensures that the debenture obligation is honored
Depositories	NSDL and CDSL	Safekeeping, reporting and settlement of clients securities	Acts like a vault for the shares that you buy. The depositories hold your shares and facilitate exchange of your securities. When you buy shares these shares sit in your Depositary account usually referred to as the DEMAT account. This is maintained electronically by only two companies in India
Depositary Participant (DP)	Most of the banks and few stock brokers	Act as an agent to the two depositories	You cannot directly interact with NSDL or CDSL. You need to liaison with a DP to open and maintain your DEMAT account
Foreign Institutional Investors	Foreign corporate, funds and individuals	Make investments in India	These are foreign entities with an interest to invest in India. They usually transact in large amounts of money, and hence their activity in the markets have an impact in terms of market sentiment

Entity	Example of companies	What do they do?	In simpler words
Merchant Bankers	Karvy, Axis Bank, Edelweiss Capital	Help companies raise money in the primary markets	If a company plans to raise money by floating an IPO, then merchant bankers are the ones who help companies with the IPO process
Asset Management Companies(AMC)	HDFC AMC, Reliance Capital, SBI Capital	Offer Mutual Fund Schemes	An AMC collects money from the public, puts that money in a single account and then invest that money in markets with an objective of making the investments grow and thereby generate wealth to its investors.
Portfolio Managers/ Portfolio Management System (PMS)	Religare Wealth Management, Parag Parikh PMS	Offer PMS schemes	They work similar to a mutual fund except in a PMS you have to invest a minimum of Rs. 25,00,000 however there is no such cap in a mutual fund
Stock Brokers and Sub Brokers	Zerodha, Sharekhan, ICICI Direct	Act as a intermediary between an investor and the stock exchange	Whenever you want to buy or sell shares from the stock exchange you have to do so through registered stock brokers. A sub broker is like an agent to a stock broker

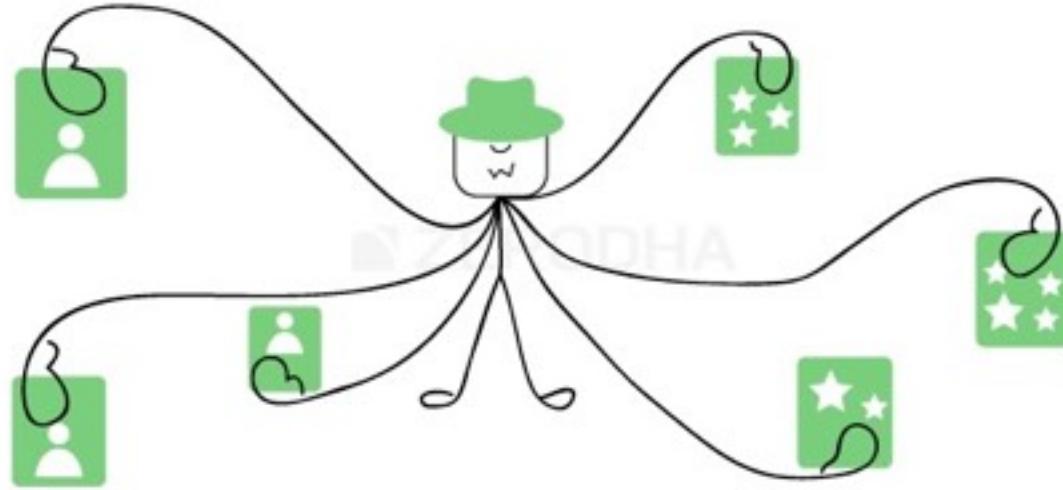
---

## Key takeaways from this chapter

1. Stock market is the place to go to if you want to transact in equities
2. Stock markets exists electronically and can be accessed through a stock broker
3. There are many different kinds of market participants operating in the stock markets
4. Every entity operating in the market has to be regulated and they can operate only within the framework as prescribed by the regulator
5. SEBI is the regulator of the securities market in India. They set the legal frame work and regulate all entities interested in operating in the market.
6. Most importantly you need to remember that SEBI is aware of what you are doing and they can flag you down if you are up to something fishy in the markets!



# Financial Intermediaries



## 3.1 - Overview

From the time you access the market – let's just say, to buy a stock till the time the stocks comes and hits your DEMAT account, a bunch of corporate entities are actively involved in making this work for you. These entities play their role quietly behind the scene, always complying with the rules laid out by SEBI and ensure an effortless and smooth experience for your transactions in the stock market. These entities are generally referred to as the Financial Intermediaries.

Together, these financial intermediaries, interdependent of one another, create an ecosystem in which the financial markets exists. This chapter will help you get an overview of who these financial intermediaries are and the services they offer.



## 3.2 - The Stock Broker

The stock broker is probably one of the most important financial intermediaries that you need to know. A stock broker is a corporate entity, registered as a trading member with the stock exchange and holds a stock broking license. They operate under the guidelines prescribed by SEBI.

A stock broker is your gateway to stock exchanges. To begin with, you need to open something called as a ‘Trading Account’ with a broker who meets your requirement. Your requirement could be as simple as the proximity between the broker’s office and your house. At the same time it can be as complicated as identifying a broker who can provide you a single platform using which you can transact across multiple exchanges across the world. At a later point we will discuss what these requirements could be and how to choose the right broker.

A trading account lets you carry financial transactions in the market. A trading account is an account with the broker which lets the investor to buy/sell securities.

So assuming you have a trading account - whenever you want to transact in the markets you need to interact with your broker. There are few standard ways through which you can interact with your broker.

1. You can go to the broker’s office and meet the dealer in the broker’s office and tell him what you wish to do. A dealer is an executive at the stock broker’s office who carries out these transactions on your behalf.
2. You can make a telephone call to your broker, identify yourself with your client code (account code) and place an order for your transaction. The dealer at the other end will execute the order for you and confirm the status of the same while you are still on the call.
3. Do it yourself – this is perhaps the most popular way of transacting in the markets. The broker gives you access to the market through software called ‘Trading Terminal’. After you login in to the trading terminal, you can view live price quotes from the market, and can also place orders yourself.

The basic services provided by the brokers includes..

1. Give you access to markets and letting you transact
2. Give you margins for trading – We will discuss this point at a later stage
3. Provide support – Dealing support if you have to call and trade. Software support if you have issues with the trading terminal

4. Issue contract notes for the transactions – A contract note is a written confirmation detailing the transactions you have carried out during the day
5. Facilitate the fund transfer between your trading and bank account
6. Provide you with a back office login – using which you can see the summary of your account
7. The broker charges a fee for the services that he provides called the ‘brokerage charge’ or just brokerage. The brokerage rates vary, and it's up to you to find a broker who strikes a balance between the fee he collects versus the services he provides.



### 3.3 - Depository and Depository Participants

When you buy a property the only way to identify and claim that you actually own the property is by producing the property papers. Hence it becomes extremely important to store the property papers in a safe and secure place.

Likewise when you buy a share (a share represents a part ownership in a company) the only way to claim your ownership is by producing your share certificate. A share certificate is nothing but a piece of document entitling you as the owner of the shares in a company.

Before 1996 the share certificate was in paper format however post 1996, the share certificates were converted to digital form. The process of converting paper format share certificate into digital format share certificate is called “Dematerialization” often abbreviated as DEMAT.

The share certificate in DEMAT format has to be stored digitally. The storage place for the digital share certificate is the ‘DEMAT Account’. A Depository is a financial intermediary which offers the service of Demat account. A DEMAT account in your name will have all the shares in electronic format you have bought. Think of DEMAT account as a digital vault for your shares.

As you may have guessed, the trading account from your broker and the DEMAT account from the Depository are interlinked.

So for example if your idea is to buy Infosys shares then all you need to do is open your trading account, look for the prices of Infosys and buy it. Once the transaction is complete, the role of your trading account is done. After you buy, the shares of Infosys will automatically come and sit in your DEMAT account.

Likewise when you wish to sell Infosys shares, all you have to do is open your trading account and sell the stock. This takes care of the transaction part...however in the backend, the shares which

are sitting in your DEMAT account will get debited, and the shares move out of your DEMAT account.

At present there are only two depositaries offering you DEMAT account services. They are The National Securities Depository Limited (NSDL) and Central Depository Services (India) Limited. There is virtually no difference between the two and both of them operate under strict SEBI regulations.

Just like the way you cannot walk into National Stock Exchange's office to open a trading account, you cannot walk into a Depository to open a DEMAT account. To open a DEMAT account you need to liaison with a Depository Participant (DP). A DP helps you set up your DEMAT account with a Depository. A DP acts as an agent to the Depository. Needless to say, even the DP is governed by the regulations laid out by the SEBI.



### 3.4 - Banks

Banks play a very straight forward role in the market ecosystem. They help in facilitating the fund transfer from your bank account to your trading account. You may be interested to note that for a given trading account only one bank account can be interlinked. You cannot transfer money from a bank account that is not in your name.

If you have multiple bank accounts, you need to specify which particular bank account that will be linked to your trading account. Of course you can remove the bank account and link it with another bank account of yours, but that requires some amount of paper work. However, for the money to come in and go out of your trading account, it has to happen only via the bank account that has been specified and linked.

Also, at this stage, you must have realized that the three financial intermediaries operate via three different accounts - trading account, DEMAT account and Bank account. All the three accounts operate electronically and are interlinked giving you a very seamless experience.



### 3.5 NSCCL and ICCL

NSCCL – National Security Clearing Corporation Ltd and Indian Clearing Corporation are wholly owned subsidiaries of National Stock Exchange and Bombay Stock Exchange respectively.

The job of the clearing corporation is to ensure guaranteed settlement of your trades/transactions. For example if you were to buy 1 share of Biocon at Rs.446 per share there must be someone who has sold that 1 share to you at Rs.446 . For this transaction, you will be debited

Rs.446 from your trading account and someone must be credited that Rs.446 toward the sale of Biocon. In a typical transaction like this the clearing corporation's role is to ensure the following:

- a) Identify the buyer and seller and match the debit and credit process
- b) Ensure no defaults – The clearing corporation also ensures there are no defaults by either party. For instance the seller after selling the shares should not be in a position to back out thereby defaulting in his transaction.

For all practical purposes, it's ok not to know much about NSCCL or ICCL simply because, you as a trader or investor would not be interacting with these agencies directly. You just need to be aware that there are certain professional institutions which are heavily regulated and they work towards smooth settlement, and efficient clearing activity.

---

## Key takeaways from this chapter

1. The market ecosystem is built by a cluster of financial intermediaries, each offering services that are unique to the functioning of markets
2. A stock broker is your access to markets, so make sure you choose a broker that matches your requirements, and services well.
3. A stock broker provides you a trading account which is used for all market related transactions (buying and selling of financial instruments like shares)
4. A Depository Participant (DP) is a corporate entity that holds the shares in electronic form against your name in your account. Your account with the DP is called the 'DEMAT' account
5. There are only two depositories in India – NSDL and CDSL
6. To open a DEMAT account with one of the depositories you need to liaison with a Depository Participant (DP). A DP functions as an agent to the Depository
7. A clearing corporation works towards clearing and settling of trades executed by you.



# The IPO Markets - Part 1

## 4.1 - Overview

The initial three chapters has set the background on some of the basic market concepts that you need to know. At this stage it becomes imperative to address a very basic question – Why do companies go public?

A good understanding of this topic lays down a sound foundation for all future topics. We will learn new financial concepts during the course of this chapter.



## 4.2 - Origin of a Business

Before we jump ahead to seek an answer as to why companies go public, let us spend some time figuring out a more basic concept - the origins of a typical business. To understand this concept better, we will build a tangible story around it. Let us split this story into several scenes just so that we get a clear understanding of how the business and the funding environment evolves.

## SCENE 1 – THE ANGELS



Let us imagine a budding entrepreneur with a brilliant business idea – to manufacture highly fashionable, organic cotton t-shirts. The designs are unique, has attractive price points and the best quality cotton is used to make these t-shirts. He is confident that the business will be successful, and is all enthusiastic to launch the idea into a business.

As a typical entrepreneur he is likely to be hit by the typical problem – where would he get the money to fund the idea? Assuming the entrepreneur has no business background he will not attract any serious investor at the initial stage. Chances are, he would approach his family and friends to pitch the idea and raise some money. He could approach the bank for a loan as well but this would not be the best option.

Let us assume that he pools in his own money and also convinces two of his good friends to invest in his business. Because these two friends are investing at the pre revenue stage and taking a blind bet on the entrepreneur they would be called the **Angel investors**. Please note, the money from the angels is not a loan, it is actually an investment made by them.

So let us imagine that the promoter along with the angels raise INR 5 Crore in capital. This initial money that he gets to kick start his business is called '**The Seed Fund**'. It is important to note that the seed fund will not sit in the entrepreneur's (also called the promoter) personal bank account but instead sits in the company's bank account. Once the seed capital hits the company's bank account, the money will be referred to as the initial **share capital** of the company.

In return of the initial seed investment, the original three (promoter plus 2 angels) will be issued share certificates of the company which entitles them an ownership in the company.

The only asset that the company has at this stage is cash of INR 5 Crs, hence the value of the company is also INR 5 Crs. This is called the company's **valuation**.

Issuing shares is quite simple, the company assumes that each share is worth Rs.10 and because there is Rs.5 crore as share capital, there has to be 50 lakh shares with each share worth Rs.10. In

In this context, Rs.10 is called the ‘Face value’ (FV) of the share. The face value could be any number. If the FV is Rs.5, then the number of shares would be 1 crore, so on and so forth.

The total of 50 lakh shares is called the **Authorized shares** of the company. These shares have to be allotted amongst the promoter and two angels plus the company has to retain some amount of shares with itself to be issued in the future.

So let us assume the promoter retains 40% of the shares and the two angels get 5% each and the company retains 50% of the shares. Since the promoter and two angels own 50% of the shares, this allotted portion is called **Issued shares**.

Table 4.1 - Initial Shareholding Pattern

Sl No	Name of Share Holder	No of Shares	%Holding
1	Promoter	2,000,000	40%
2	Angel 1	250,000	5%
3	Angel 2	250,000	5%
	<b>Total</b>	<b>2,500,000</b>	<b>50%</b>

The share holding pattern of this company would look something like this..

Please note the balance 50% of the shares totaling 2,500,000 equity shares are retained by the company. These shares are authorized **but not allotted**.

Now backed by a good company structure and a healthy seed fund the promoter kick starts his business operations. He wants to move cautiously, hence he decides to open just one small manufacturing unit and one store to retail his product.

## SCENE 2 – THE VENTURE CAPITALIST



His hard work pays off and the business starts to pick up. At the end of the first two years of operations, the company starts to break even. The promoter is now no longer a rookie business owner, instead he is more knowledgeable about his own business and of course more confident.

Backed by his confidence, the promoter now wants to expand his business by adding 1 more manufacturing unit and few additional retail stores in the city. He chalks out the plan and figures out that the fresh investment needed for his business expansion is INR 7 Crs.

He is now in a better situation when compared to where he was two years ago. The big difference is the fact that his business is generating revenues. Healthy inflow of revenue validates the business and its offerings. He is now in a situation where he can access reasonably savvy investors for investing in his business. Let us assume he meets one such professional investor who agrees to give him 7 Crs for a 14% stake in his company.

The investor who typically invests in such early stage of business is called a **Venture Capitalist** (VC) and the money that the business gets at this stage is called **Series A** funding.

After the company agrees to allot 14% to the VC from the authorized capital the shareholding pattern looks like this:

Table 4.2 - Second stage shareholding pattern

Sl No	Name of Share Holder	No of Shares	%Holding
1	Promoter	2,000,000	40%
2	Angel 1	250,000	5%
3	Angel 2	250,000	5%
4	Venture Capitalist	700,000	14%
	<b>Total</b>	<b>3,200,000</b>	<b>64%</b>

Note, the balance 36% of shares is still retained within the company and has not been issued.

Now, with the VC's money coming into the business, a very interesting development has taken place. **The VC is valuing the entire business at INR 50 Crs by valuing his 14% stake in the company at INR 7Crs.** With the initial valuation of 5Crs, there is a 10 fold increase in the company's valuation. This is what a good business plan, validated by a healthy revenue stream can do to businesses. It works as a perfect recipe for wealth creation.

With the valuations going up, the investments made by the initial investors will have an impact. The following table summarizes the same...

Table 4.3 - Third stage shareholding pattern

Sl No	Name of Share Holder	Initial Shareholding	Initial Valuation	Shareholding after 2 Yrs	Valuation after 2 Yrs	Wealth Created
1	Promoter	40%	2 Crs	40%	20 Crs	10 times
2	Angel 1	5%	25 Lakhs	5%	2.5 Crs	10 times
3	Angel 2	5%	25 Lakhs	5%	2.5 Crs	10 times
4	Venture Capitalist	0%	-NA-	14%	07 Crs	-NA-
	<b>Total</b>	<b>50%</b>	<b>2.5 Crs</b>	<b>64%</b>	<b>32 Crs</b>	

Going forward with our story, the promoter now has the additional capital he requires for the business. The company gets an additional manufacturing unit and few more retail outlets in the city as planned. Things are going great; popularity of the product grows, translating into higher revenues, management team gets more professional thereby increasing the operational efficiency and all this translates to better profits.

### SCENE 3 – THE BANKER



Three more years pass by and the company is phenomenally successful. The company decides to have a retail presence in at least 3 more cities. To back the retail presence across three cities, the company also plans to increase the production capacity and hire more resources. Whenever a company plans such expenditure to improve the overall business, the expenditure is called ‘Capital Expenditure’ or simply ‘**CAPEX**’.

The management estimates 40Crs towards their Capex requirements. How does the company get this money or in other words, how can the company fund its Capex requirements?

There are few options with the company to raise the required funds for their Capex...

1. The company has made some profits over the last few years; a part of the Capex requirement can be funded through the profits. This is also called funding through **internal accruals**
2. The company can approach another VC and raise another round of VC funding by allotting shares from the authorized capital – this is called **Series B funding**

3. The company can approach a bank and seek a loan. The bank would be happy to tender this loan as the company has been doing fairly well. The loan is also called '**Debt**'

The company decides to exercise all the three options at its disposal to raise the funds for Capex. It ploughs 15Crs from internal accruals, plans a series B - divests 5% equity for a consideration of 10Crs from another VC and raise 15Crs debt from the banker.

Note, with 10Crs coming in for 5%, the valuation of the company now stands at 200 Crs. Of course, this may seem a bit exaggerated, but then the whole purpose of this story is drive across the concept!

The shareholding and valuation look something like this

Table 4.4 - Fourth stage shareholding pattern

Sl No	Name of Share Holder	No of Shares	%Holding	Valuation
1	Promoter	2,000,000	40%	80 Crs
2	Angel 1	250,000	5%	10 Crs
3	Angel 2	250,000	5%	10 Crs
4	VC Series A	700,000	14%	28 Crs
5	VC Series B	250,000	5%	10 Crs

Note, the company still has 31% of shares not allotted to shareholders which are now being valued at 62 Crs. Also, I would encourage you to think about the wealth that has been created over the years. This is exactly what happens to entrepreneurs with great business ideas, and with a highly competent management team.

Classic real world examples of such wealth creation stories would be Infosys, Page Industries, Eicher Motors, Titan industries and in the international space one could think of Google, Facebook, Twitter, WhatsApp etc.

## SCENE 4 – THE PRIVATE EQUITY



Few years pass by and the company's success continues to shine on. With the growing success of this 8 year old, 200 Cr Company, the ambitions are also growing. The company decides to raise the bar and branch out across the country. They also decide to diversify the company by manufacturing and retailing fashion accessories, designer cosmetics and perfumes.

The capex requirement for the new ambition is now pegged at 60 Crs. The company does not want to raise money through debt because of the interest rate burden, also called the **finance charges** which would eat away the profits the company generates.

They decide to allot shares from the authorized capital for a Series C funding. They cannot approach a typical VC because VC funding is usually small and runs into few crores. This is when a **Private Equity (PE)** investor comes into the picture.

PE investors are quite savvy. They are highly qualified, and have an excellent professional background. They invest large amounts of money with the objective of not only providing the capital for constructive use but also place their own people on the board of the investee company to ensure the company steers in the required direction.

Assuming they pick up 15% stake for a consideration of 60Crs, they are now valuing the company at 400Crs. Let's have a quick look at the share holding and valuations..

Table 4.5 - Fifth stage shareholding pattern

Sl No	Name of Share Holder	No of Shares	%Holding	Valuation (in Crs)
1	Promoter	2,000,000	40%	160
2	Angel 1	250,000	5%	20
3	Angel 2	250,000	5%	20
4	VC Series A	700,000	14%	56
5	VC Series B	250,000	5%	20
6	PE Series C	1,000,000	15%	60
	Total	<b>4,450,000</b>	<b>84%</b>	<b>336</b>

Please note, the company has retained back 16% stake which has not been allotted to any shareholder. This portion is valued at 64 Crs

Usually, when a PE invests, they invest with an objective to fund large capex requirements. Besides they do not invest in the early stage of a business instead they prefer to invest in companies that already has a revenue stream, and is in operation for a few years. The process of deploying the PE capital and utilizing the capital for the capex requirements takes up a few years.

### SCENE 5 – THE IPO



5 years after the PE investment, the company has progressed really well. They have successfully diversified their product portfolio plus they have a presence across all the major cities in the country. Revenues are good, profitability is stable and the investors are happy. The promoter however does not want settle in for just this.

The promoter now aspires to go international! He wants his brand to be available across all the major international cities; he wants at least two outlets in each major city across the world.

This means, the company needs to invest in market research to understand what people like in other countries, they need to invest in people, and also work towards increasing the manufacturing capacities. Besides they also need to invest into real estate space across the world.

This time around the Capex requirement is huge and the management estimates this at 200 Crs. The company has few options to fund the Capex requirement.

1. Fund Capex from internal accruals
2. Raise Series D from another PE fund
3. Raise debt from bankers
4. Float a bond (this is another form of raising debt)
5. File for an Initial Public Offer (IPO) by allotting shares from authorized capital
6. A combination of all the above

For sake of convenience, let us assume the company decides to fund the capex partly through internal accruals and also file for an IPO. When a company files for an IPO, they have to offer their

shares to the general public. The general public will subscribe to the shares (i.e if they want to) by paying a certain price. Now, because the company is offering the shares for the first time to the public, it is called the “**Initial Public Offer**”.

We are now at a very crucial juncture, where a few questions need to be answered..

1. Why did the company decide to file for an IPO? In general why do companies go public?
2. Why did they not file for the IPO when they were in Series A, B and C situation?
3. What would happen to the existing share holders after the IPO?
4. What do the general public look for before they subscribe to the IPO?
5. How does the IPO process evolve?
6. Who are the financial intermediaries involved in the IPO markets?
7. What happens after the company goes public?

In the following chapter we will address each of the above questions plus more, and we will also give you more insights to the IPO Market. For now, hopefully you should have developed a sense of how a successful company evolves before they come out to the public to offer their shares.

The purpose of this chapter is to just give you a sense of completeness when one thinks about an IPO.

---

## Key takeaways from this chapter

1. Before understanding why companies go public, it is important to understand the origin of business
2. The people who invest in your business in the pre-revenue stage are called Angel Investors
3. Angel investors take maximum risk. They take in as much risk as the promoter
4. The money that angels give to start the business is called the seed fund
5. Angels invest relatively a small amount of capital
6. Valuation of a company simply signifies how much the company is valued at. When one values the company they consider the company's assets and liabilities
7. A face value is simply a denominator to indicate how much one share is originally worth
8. Authorized shares of the company is the total number of shares that are available with the company
9. The shares distributed from the authorized shares are called the issued shares. Issued shares are always a subset of authorized shares.
10. The shareholding pattern of a company tells us who owns how much stake in the company
11. Venture Capitalists invest at an early stage in business; they do not take as much risk as Angel investors. The quantum of investments by a VC is usually somewhere in between an angel and private equity investment
12. The money the company spends on business expansion is called capital expenditure or capex
13. Series A, B, and C etc are all funding that the company seeks as they start evolving. Usually higher the series, higher is the investment required.
14. Beyond a certain size, VCs cannot invest, and hence the company seeking investments will have to approach Private Equity firms
15. PE firms invest large sums of money and they usually invest at a slightly more mature stage of the business
16. In terms of risk, PE's have a lower risk appetite as compared to VC or angels
17. Typical PE investors would like to deploy their own people on the board of the investee company to ensure business moves in the right direction

18.The valuation of the company increases as and when the business , revenues and profitability increases

19.An IPO is a process by means of which a company can raise fund. The funds raised can be for any valid reason – for CAPEX, restructuring debt, rewarding shareholders etc



# The IPO Markets - Part 2

## 5.1 - Overview

The previous chapter gave us an understanding on how a company evolved right from the idea generation stage to all the way till it decides to file for an IPO. The idea behind creating the fictional story in the previous chapter was to give you a sense of how a business matures over time. The emphasis obviously was on the different stages of business and funding options available at various stages of business. The previous chapter gives you a perspective of what a company would have gone through before it comes out to public to offer its shares.

This is extremely important to know because the IPO market, also called the **Primary market** sometimes attracts companies offering their shares to public without actually going through a healthy round of funding in the past. Few rounds of funding by credible VC, and PE firm validate the quality of the business and its promoters. Of course you need to treat this with a pinch of salt but nevertheless it acts as an indicator to identify well run companies.



## 5.2 - Why do companies go public?

We closed the previous chapter with few very critical questions. One of which – Why did the company decide to file for an IPO, and in general why do companies go public?

When a company decides to file for an IPO, invariably the main reason is to raise funds to fuel their Capex requirement. The promoter has 3 advantages by taking his company public..

1. He is raising funds to meet Capex requirement
2. He is avoiding the need to raise debt which means he does not have to pay finance charges which translates to better profitability
3. Whenever you buy a share of a company, you are in essence taking the same amount of risk as the promoter is taking. Needless to say, the proportion of the risk and its impact will depend on the quantity of shares you hold. Nonetheless, whether you like it or not, when you buy shares you also buy risk. So when the company goes public, the promoter is actually spreading his risk amongst a large group of people.

There are other advantages as well in going for an IPO...

**1. Provide an exit for early investors** - Once the company goes public, the shares of the company start trading publicly. Any existing shareholder of the company – could be promoters, angel investors, venture capitalist, PE funds; can use this opportunity to sell their shares in the open market. By selling their shares, they get an exit on their initial investment in the company. They can also choose to sell their shares in smaller chunks if they wish.

**2. Reward employees** – Employees working for the company would have shares allotted to them as an incentive. This sort of arrangement between the employee and the company is called the “Employee Stock Option”. The shares are allotted at a discount to the employees. Once the company goes public, the employees stand a chance to see capital appreciation in the shares. Few examples where the employee benefited from ESOP would be Google, Infosys, Twitter, Facebook etc

**3. Improve visibility** - Going public definitely increases visibility as the company has a status of being publicly held and traded. There is a greater chance of people's interest in the company, consequently creating a positive impact on its growth.

So let's just build on our fictional business story from the previous chapter a little further and figure out the IPO details of this company.

If you recollect, the company requires 200 Crs to fund their capex and the management had decided to fund this partly by internal accrual and partly by filing for an IPO.

Do recollect that company still has 16% of authorized capital translating to 800,000 shares which are not allotted. The last valuation of these shares when the PE firm invested in Series B was 64Crs. The company has progressed really well ever since the PE firm has invested and naturally the valuation of these shares would have gone up.

For the sake of simplicity, let us assume the company is now valuing the 16% shares anywhere between 125 Crs to 150 Crs. This translates to a per share value, anywhere between Rs.1562 to Rs.1875/-...(125Crs/8lakh).

So if the company puts 16% on the block to the public, they are likely to raise anywhere between 125 to 150 Crs. The remainder has to come from internal accruals. So naturally, the more money they raise, better it is for the company.

### 5.3 - Merchant Bankers

Having decided to go public, the company must now do a series of things to ensure a successful initial public offering. The first and foremost step would be to appoint a **merchant banker**. Merchant bankers are also called **Book Running Lead Managers (BRLM)/Lead Manager (LM)**. The job of a merchant banker is to assist the company with various aspects of the IPO process including...

- Conduct a due diligence on the company filing for an IPO, ensure their legal compliance and also issue a due diligence certificate
- Should work closely with the company and prepare their listing documents including **Draft Red Herring Prospectus (DRHP)**. We will discuss this in a bit more detail at a later stage
- **Underwrite shares** – By underwriting shares, merchant bankers essentially agree to buy all or part of the IPO shares and resell the same to public
- Help company arrive at the price band for the IPO. A **price band** is the lower and upper limit of the share price within which the company will go public. In case of our example, the price band will be Rs.1562/- and Rs.1875/-
- Help the company with the road shows – This is like a promotional/marketing activity for the company's IPO

- Appointment of other intermediaries namely, registrars, bankers, advertising agencies etc. The Lead manager also makes various marketing strategies for the issue

Once the company partners with the merchant banker, they will work towards taking the company public.

## 5.4 - IPO sequence of events

Needless to say each and every step involved in the IPO sequence has to happen under the SEBI guidelines. In general, the following are the sequence of steps involved.

- **Appoint a merchant banker.** In case of a large public issue, the company can appoint more than 1 merchant banker
- **Apply to SEBI with a registration statement** – The registration statement contains details on what the company does, why the company plans to go public and the financial health of the company
- **Getting a nod from SEBI** – Once SEBI receives the registration statement, SEBI takes a call on whether to issue a go ahead or a ‘no go’ to the IPO
- **DRHP** – If the company gets the initial SEBI nod, then the company needs to prepare the DRHP. A DRHP is a document that gets circulated to the public. Along with a lot of information, DRHP should contain the following details..
  - a.The estimated size of the IPO
  - b.The estimated number of shares being offered to public
  - c.Why the company wants to go public and how does the company plan to utilize the funds along with the timeline projection of fund utilization
  - d.Business description including the revenue model, expenditure details
  - e.Complete financial statements
  - f.Management Discussion and Analysis – how the company perceives the future business operations to emerge
  - g.Risks involved in the business
  - h.Management details and their background
- **Market the IPO** – This would involve TV and print advertisements in order to build awareness about the company and its IPO offering. This process is also called the IPO road show

- **Fix the price band** – Decide the price band between which the company would like to go public. Of course this can't be way off the general perception. If it is, then the public will not subscribe for the IPO
- **Book Building** – Once the road show is done and price band fixed the company now has to officially open the window during which the public can subscribe for shares. For example, if the price band is between Rs.100 and Rs.120, then the public can actually choose a price they think is fair enough for the IPO issue. The process of collecting all these price points along with the respective quantities is called Book Building. Book building is perceived as an effective price discovery method
- **Closure** – After the book building window is closed (generally open for few days) then the price point at which the issue gets listed is decided. This price point is usually that price at which maximum bids have been received.
- **Listing Day** – This is the day when the company actually gets listed on the stock exchange. The listing price is the price discovered through the book building process.

## 5.5 - What happens after the IPO?

During the bidding process (also called the date of issue) investors can bid for shares at a particular price within the specified price band. This whole system around the date of issue where one bids for shares is referred to as the **Primary Market**. The moment the stock gets listed and debuts on the stock exchange, the stock starts to trade publicly. This is called the **secondary markets**.

Once the stock transitions from primary markets to secondary markets, the stock gets traded daily on the stock exchange. People start buying and selling the stocks regularly.

Why do people trade? Why does the stock price fluctuate? Well, we will answer all these questions and more in the subsequent chapters.

## 5.6 Few key IPO jargons

Before we wrap up the chapter on IPO's let us review few important IPO jargons.

 **Under Subscription** – Let's say the company wants to offer 100,000 shares to the public. During the book building process it is discovered that only 90,000 bids were received, then the issue

is said to be under subscribed. This is not a great situation to be in as it indicates negative public sentiment

 Over subscription – If there are 200,000 bids for 100,000 shares on offer then the issue is said to be oversubscribed 2 times (2x)

 Green Shoe Option - Part of the underwriting agreement which allows the issuer to authorize additional shares (typically 15 percent) to be distributed in the event of over subscription. This is also called the over allotment option

 Fixed Price IPO – Sometimes the companies fix the price of the IPO and do not opt for a price band. Such issues are called fixed price IPO

 Price Band and Cut off price – Price band is a price range between which the stock gets listed. For example if the price band is between Rs.100 and Rs.130, then the issue can list within the range. Let's say it gets listed at 125, then 125 is called the cut off price.

## Recent IPO's in India\*

Here is a look at few recent IPO's in India. With all the background information you now have, reading Table 5.1 in the following page should be easy

Table 5.1 - Recent IPO's in India

Sl No	Name of Issue	Issue Price (INR)	BRLM	Date of Issue	Issue Size (Lakh Shares)	Price Band (INR)
1	Wonderla Holidays Limited	125	Edelweiss Financial Services and ICICI Securities Limited	21/04/2014 to 23/04/2014	14,500,000	115 to 125
2	Power Grid Corporation of India Ltd	90	SBI, Citi, ICICI, Kotak, UBS	03/12/2013 to 06/12/2013	787,053,309	85 to 90
3	Just Dial Ltd	530	Citi, Morgan Stanley	20/05/2013 to 22/05/2013	17,493,458	470 to 543
4	Repco Homes Finance Limited	172	SBI, IDFC, JM Financials	13/03/2013 to 15/03/2013	1,57,20,262	165 to 172
5	V-Mart Retail Ltd	210	Anand Rathi	01/02/2013 to 05/02/2013	4,496,000	195 to 215

\*Source : NSE India, as of June 2014

---

## Key takeaways from this chapter

1. Companies go public to raise funds, provide an exit for early investors, reward employees and gain visibility
2. Merchant banker acts as a key partner with the company during the IPO process
3. SEBI regulates the IPO market and has the final word on whether a company can go public or not
4. As an investor in the IPO you should read through the DRHP to know everything about the company
5. Most of the IPOs in India follow a book building process



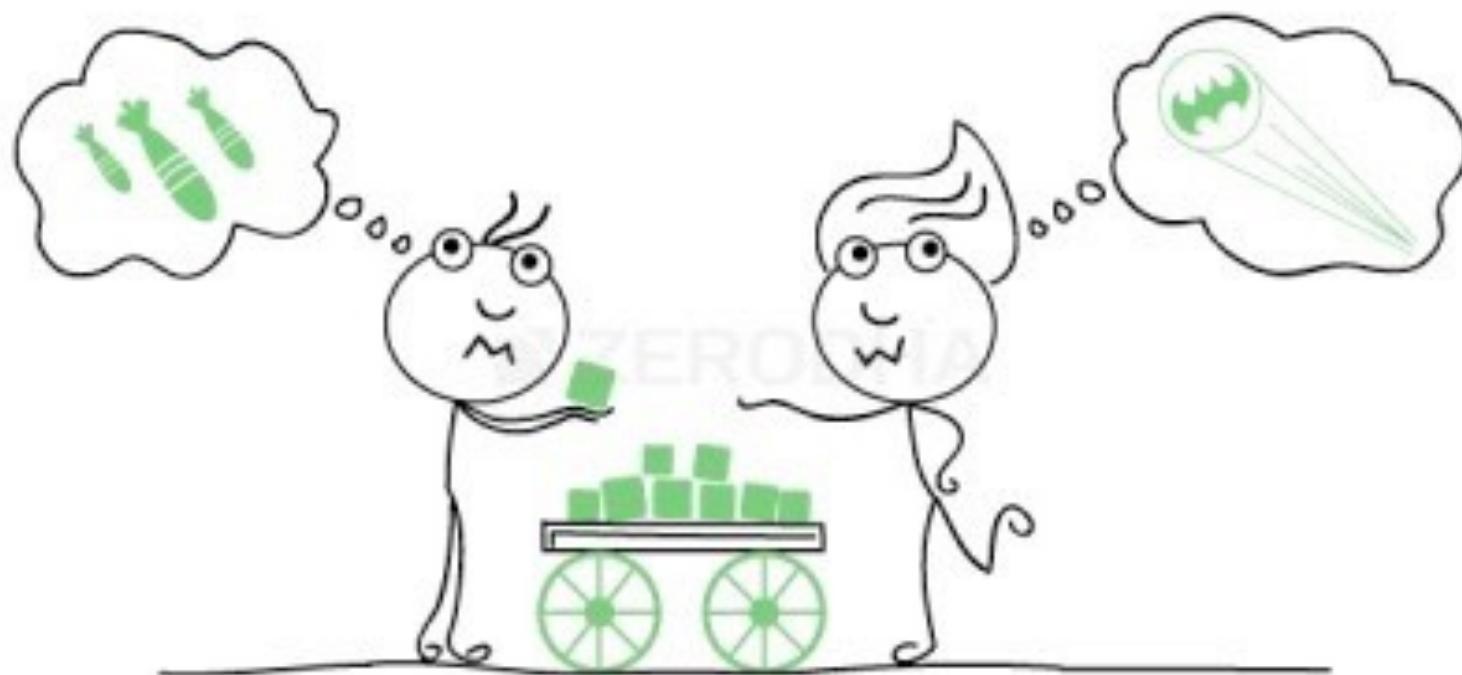
# The Stock Markets

## 6.1 - Overview

Having understood the IPO process and what really goes behind the company's transition from primary to secondary market we are now set to explore the stock markets a step further.

By virtue of being a public company, the company is now liable to disclose all information related to the company to the public. The shares of a public limited company are traded on the stock exchanges on a daily basis.

There are few reasons why market participants trade stocks. We will explore these reasons in this chapter.



## 6.2 - What really is the stock market?

Like we discussed in chapter 2, the stock market is an electronic market place. Buyers and sellers meet and trade their point of view.

For example, consider the current situation of Infosys. At the time of writing this, Infosys is facing a succession issue, and most of its senior level management personnel are quitting the company for internal reasons. It seems like the leadership vacuum is weighing down the company's reputation heavily. As a result, the stock price dropped to Rs.3,000 all the way from Rs.3,500. Whenever there are new reports regarding Infosys management change, the stock prices react to it.

Assume there are two traders – T1 and T2.

T1's point of view on Infosys - The stock price is likely to go down further because the company will find it challenging to find a new CEO.

If T1 trades as per his point of view, he should be a seller of the Infosys stock.

T2, however views the same situation in a different light and therefore has a different point of view – According to him, the stock price of Infosys has over reacted to the succession issue and soon the company will find a great leader, after whose appointment the stock price will move upwards.

If T2 trades as per his point of view, he should be a buyer of the Infosys stock.

So at, Rs.3,000 T1 will be a seller, and T2 will be a buyer in Infosys.

Now both T1 and T2 will place orders to sell and buy the stocks respectively through their respective stock brokers. The stock broker, obviously routes it to the stock exchange.

The stock exchange has to ensure that these two orders are matched, and the trade gets executed. This is the primary job of the stock market – to create a market place for the buyer and seller.

The stock market is a place where market participants can access any publicly listed company and trade from their point of view, as long as there are other participants who have an opposing point of view. After all, different opinions are what make a market.

## 6.3 - What moves the stock?

Let us continue with the Infosys example to understand how stocks really move. Imagine you are a market participant tracking Infosys.

It is 10:00 AM on 11th June 2014 ,and the price of Infosys is 3000. The management makes a statement to the press that they have managed to find a new CEO who is expected to steer the company to greater heights. They are confident on his capabilities and they are sure that the new CEO will deliver much more than what is expected out of him.

Two questions –

- a.How will the stock price of Infosys react to this news?
- b.If you were to place a trade on Infosys, what would it be? Would be a buy or a sell?

The answer to the first question is quite simple, the stock price will move up.

Infosys had a leadership issue, and the company has fixed it. When positive announcements are made market participants tend to buy the stock at any given price and this cascades into a stock price rally.

Let me illustrate this further in Table 6.1

Table 6.1 - Trade Flow

Sl No	Time	Last Traded Price	What price the seller wants	What does the buyer do?	New Last Trade Price
1	10:00	3000	3002	He buys	3002
2	10:01	3002	3006	He buys	3006
3	10:03	3006	3011	He buys	3011
4	10:05	3011	3016	He buys	3016

Notice, whatever prices the seller wants the buyer is willing to pay for it. This buyer-seller reaction tends to push the share price higher.

So as you can see, the stock price jumped 16 Rupees in a matter of 5 minutes. Though this is a fictional situation, it is a very realistic, and typical behavior of stocks. The stocks price tends to go up when the news is good or expected to be good.

In this particular case, the stock moves up because of two reasons. One, the leadership issue has been fixed, and two, there is also an expectation that the new CEO will steer the company to greater heights.

The answer to the second question is now quite simple; you buy Infosys stocks considering the fact that there is good news surrounding the stock.

Now, moving forward in the same day, at 12:30 PM ‘The National Association of Software & Services company’, popularly abbreviated as NASSCOM makes a statement. For those who are not aware, NASSCOM is a trade association of Indian IT companies. NASSCOM is considered to be a very powerful organization and whatever they say has an impact on the IT industry.

The NASSCOM makes a statement stating that the customer’s IT budget seems to have come down by 15%, and this could have an impact on the industry going forward.

By 12:30 PM let us assume Infosys is trading at 3030. Few questions for you..

- a.How does this new information impact Infosys?
- b.If you were to initiate a new trade with this information what would it be?
- c.What would happen to the other IT stocks in the market?

The answers to the above questions are quite simple. Before we start answering these questions, let us analyze NASSCOM’s statement in a bit more detail.

NASSCOM says that the customer’s IT budget is likely to shrink by 15%. This means the revenues and the profits of IT companies are most likely to go down soon. This is not great news for the IT industry.

Let us now try and answer the above questions..

- a.Infosys being a leading IT major in the country will react to this news. The reaction could be mixed one because earlier during the day there was good news specific to Infosys. However a 15% decline in revenue is a serious matter and hence Infosys stocks are likely to trade lower
- b.At 3030, if one were to initiate a new trade based on the new information, it would be a sell on Infosys
- c.The information released by NASSCOM is applicable to the entire IT stocks and not just Infosys. Hence all IT companies are likely to witness a selling pressure.

So as you notice, market participants react to news and events and their reaction translates to price movements! This is what makes the stocks move.

At this stage you may have a very practical and valid question brewing in your mind. You may be thinking what if there is no news today about a particular company? Will the stock price stay flat and not move at all?

Well, the answer is both yes and no, and it really depends on the company in focus.

For example let us assume there is absolutely no news concerning two different companies..

1. Reliance Industries Limited
2. Shree Lakshmi Sugar Mills

As we all know, Reliance is one the largest companies in the country and regardless of whether there is news or not, market participants would like to buy or sell the company's shares and therefore the price moves constantly.

The second company is a relatively unknown and therefore may not attract market participant's attention as there is no news or event surrounding this company. Under such circumstances, the stock price may not move or even if it does it may be very marginal.

To summarize, the price moves because of expectation of news and events. The news or events can be directly related to the company, industry or the economy as a whole. For instance the appointment of Narendra Modi as the Indian Prime Minister was perceived as positive news and therefore the whole stock market moved.

In some cases there would be no news but still the price could move due to the demand and supply situation.

## 6.4 - How does the stock get traded?

You have decided to buy 200 shares of Infosys at 3030, and hold on to it for 1 year. How does it actually work? What is the exact process to buy it? What happens after you buy it?

Luckily there are systems in place which are fairly well integrated.

With your decision to buy Infosys, you need to login to your trading account (provided by your stock broker) and place an order to buy Infosys. Once you place an order, an order ticket gets generated containing the following details:

- a. Details of your trading account through which you intend to buy Infosys shares – therefore your identity is revealed.
- b. The price at which you intend to buy Infosys
- c. The number of shares you intend to buy

Before your broker transmits this order to the exchange he needs to ensure you have sufficient money to buy these shares. If yes, then this order ticket hits the stock exchange. Once the order hits the market the stock exchange (through their order matching algorithm) tries to find a seller who is willing to sell you 200 shares of Infosys at 3030.

Now the seller could be 1 person willing to sell the entire 200 shares at 3030 or it could be 10 people selling 20 shares each or it could be 2 people selling 1 and 199 shares respectively. The permutation and combination does not really matter. From your perspective, all you need is 200 shares of Infosys at 3030 and you have placed an order for the same. The stock exchange ensures the shares are available to you as long as there are sellers in the market.

Once the trade is executed, the shares will be electronically credited to your DEMAT account. Likewise the shares will be electronically debited from the sellers DEMAT account.

## 6.5 - What happens after you own a stock?

After you buy the shares, the shares will now reside in your DEMAT account. You are now a part owner of the company, to the extent of your share holding. To give you a perspective, if you own 200 shares of Infosys then you own 0.000035% of Infosys.

By virtue of owning the shares you are entitled to few corporate benefits like dividends, stock split, bonus, rights issue, voting rights etc. We will explore all these shareholder privileges at a later stage.

## 6.6 - A note on holding period

Holding period is defined as the period during which you intend to hold the stock. You may be surprised to know that the holding period could be as short as few minutes to as long as ‘forever’. When the legendary investor Warren Buffet was asked what his favorite holding period was, he in fact replied ‘forever’.

In the earlier example quoted in this chapter, we illustrated how Infosys stocks moved from 3000 to 3016 in a matter of 5 minutes. Well, this is not a bad return after all for a 5 Minute holding period! If you are satisfied with it you can very well close the trade and move on to find another op-

portunity. Just to remind you, this is very much possible in real markets. When things are hot, such moves are quite common.

## 6.7 - How to calculate returns?

Now, everything in markets boils down to one thing. Generating a reasonable rate of return!

If your trade generates a good return all your past stock market sins are forgiven. This is what really matters.

Returns are usually expressed in terms of annual yield. There are different kinds of returns that you need to be aware of. The following will give you a sense of what they are and how to calculate the same...

Absolute Return – This is return that your trade or investment has generated in absolute terms. It helps you answer this question – I bought Infosys at 3030 and sold it 3550. How much percentage return did I generate?

The formula to calculate the same is [Ending Period Value / Starting Period Value – 1]\*100

$$\text{i.e } [3550/3030 - 1] * 100$$

$$= 0.1716 * 100$$

$$= 17.16\%$$

A 17.6% is not a bad return at all!

Compounded Annual Growth Rate (CAGR) – An absolute return can be misleading if you want to compare two investments. CAGR helps you answer this question - I bought Infosys at 3030 and held the stock for 2 years and sold it 3550. At what rate did my investment grow over the last two years?

CAGR factors in the time component which we had ignored when we computed the absolute return.

The formula to calculate CAGR is ..

$$\text{CAGR} = \left( \frac{\text{Ending Value}}{\text{Beginning Value}} \right)^{\left( \frac{1}{\# \text{ of years}} \right)} - 1$$

Applying this to answer the question..

$$\{[3550/3030]^{(1/2)} - 1\} = 8.2\%$$

This means the investment grew at a rate of 8.2% for 2 years. Considering the fact that Indian fixed deposit market offers a return of close to 8.5% return with capital protection an 8.2% return suddenly looks a bit unattractive.

So, always use CAGR when you want to check returns over multiple years. Use absolute return when your time frame is for a year or lesser.

What if you have bought Infosys at 3030 and sold it at 3550 within 6 months? In that case you have generated 17.16% in 6 months which translates to 34.32% ( $17.16\% * 2$ ) for the year.

So the point is, if you have to compare returns, its best done when the return is expressed on an annualized basis.

## 6.8 - Where do you fit in?

Each market participant has his or her own unique style to participate in the market. Their style evolves as and when they progress and witness market cycles. Their style is also defined by the kind of risk they are willing to take in the market. Irrespective of what they do, they can be categorized as either a trader or an investor.

A trader is a person who spots an opportunity and initiates the trade with an expectation of profitably exiting the trade at the earliest given opportunity. A trader usually has a short term view on markets. A trader is alert and on his toes during market hours constantly evaluating opportunities based on risk and reward. He is unbiased toward going long or going short. We will discuss what going long or short means at a later stage.

There are different types of traders :

a. **Day Trader** – A day trader initiates and closes the position during the day. He does not carry forward his positions. He is risk averse and does not like taking overnight risk. For example – He would buy 100 shares of TCS at 2212 at 9:15AM and sell it at 2220 at 3:20 PM making a profit of Rs.800/- in this trade. A day trader usually trades 5 to 6 stocks per day.

b. **Scalper** – A type of a day trader. He usually trades very large quantities of shares and holds the stock for very less time with an intention to make a small but quick profit. For example – He would buy 10,000 shares of TCS as 2212 at 9:15 and sell it 2212.1 at 9.16. He ends up making

1000/- profit in this trade. In a typical day, he would have placed many such trades. As you may have noticed a scalp trader is highly risk averse.

c. **Swing Trader** – A swing trader holds on to his trade for slightly longer time duration, the duration can run into anywhere between few days to weeks. He is typically more open to taking risks. For example – He would buy 100 shares of TCS at 2212 on 12th June 2014 and sell it 2214 on 19th June 2014.

Some of the really successful traders the world has seen are – George Soros, Ed Seykota, Paul Tudor, Micheal Steinhardt, Van K Tharp, Stanley Druckenmiller etc

An investor is a person who buys a stock expecting a significant appreciation in the stock. He is willing to wait for his investment to evolve. The typical holding period of investors usually runs into a few years. There are two popular types of investors..

a. **Growth Investors** – The objective here is to identify companies which are expected to grow significantly because of emerging industry and macro trends. A classic example in the Indian context would be buying Hindustan Unilever, Infosys, Gillette India back in 1990s. These companies witnessed huge growth because of the change in the industry landscape thereby creating massive wealth for its shareholders.

b. **Value Investors** – The objective here is to identify good companies irrespective of whether they are in growth phase or mature phase but beaten down significantly due to the short term market sentiment thereby making a great value buy. An example of this in recent times is L&T. Due to short term negative sentiment; L&T was beaten down significantly around August/September of 2013. The stock price collapsed to 690 all the way from 1200. At 690 (given its fundamentals around Aug 2013), a company like L&T is perceived as cheap, and therefore a great value pick. Eventually it did pay off, as the stock price scaled back to 1440 around May 2014.

Some of the really famous investors the world has seen – Charlie Munger, Peter Lynch, Benjamin Graham, Thomas Rowe, Warren Buffett, John C Bogle, John Templeton etc.

So what kind of market participant would you like to be?

---

## Key takeaways from this chapter

1. A stock market is a place where a trader or an investor can transact (buy, sell) in shares
2. A stock market is a place where the buyer and seller meet electronically
3. Different opinions makes a market
4. The stock exchange electronically facilitate the meeting of buyers, and sellers
5. News and events moves the stock prices on a daily basis
6. Demand supply mismatch also makes the stock prices move
7. When you own a stock you get corporate privileges like bonus, dividends, rights etc
8. Holding period is defined as the period during which you hold your shares
9. Use absolute returns when the holding period is 1 year or less. Use CAGR to identify the growth rate over multiple years
10. Traders, and investors differ on two counts – risk taking ability and the holding period.



# The Stock Markets Index



## 7.1 - Overview

If I were to ask you to give me a real time summary on the traffic situation, how would you possibly do it?

Your city may have 1000's of roads and junctions; it is unlikely you would check each and every road in the city to find the answer. The wiser thing for you to do would be to quickly check, a few important roads and junctions across the four directions of the city and observe how the traffic is moving. If you observe chaotic conditions across these roads then you would simply summarize the traffic situation as chaotic, else traffic can be considered normal.

The few important roads and junctions that you tracked to summarize the traffic situation served as a barometer for the traffic situation for the entire city!

Drawing parallels, if I were to ask you how the stock market is moving today, how would you answer my question? There are approximately 5,000 listed companies in the Bombay Stock Exchange and about 2,000 listed companies in the National Stock Exchange. It would be clumsy to check each and every company, figure out if they are up or down for the day and then give a detailed answer.

Instead you would just check few important companies across key industrial sectors. If majority of these companies are moving up you would say markets are up, if the majority is down, you would say markets are down, and if there is a mixed trend, you would say markets are sideways!

So essentially identify a few companies to represent the broader markets. So every time someone asks you how the markets are doing, you would just check the general trend of these selected stocks and then give an answer. These companies that you have identified collectively make up the stock market index!

## 7.2 - The Index

Luckily you need not actually track these selected companies individually to get a sense of how the markets are doing. The important companies are pre packaged, and continuously monitored to give you this information. This pre packaged market information tool is called the ‘Market Index’.

There are two main market indices in India. The **S&P BSE Sensex** representing the Bombay stock exchange and **CNX Nifty** representing the National Stock exchange.

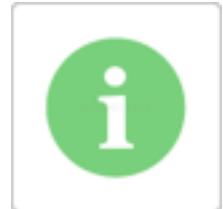
S&P stands for Standard and Poor's, a global credit rating agency. S&P has the technical expertise in constructing the index which they have licensed to the BSE. Hence the index also carries the S&P tag.

CNX Nifty consists of the largest and most frequently traded stocks within the National Stock Exchange. It is maintained by India Index Services & Products Limited (IISL) which is a joint venture of National Stock Exchange and CRISIL. In fact the term ‘CNX’ stands for CRISIL and NSE.

An ideal index gives us minute by minute reading about how the market participants perceive the future. The movements in the Index reflect the changing expectations of the market participants. When the index goes up, it is because the market participants think the future will be better. The index drops if the market participants perceive the future pessimistically.

## 7.3 - Practical uses of the Index

Some of the practical uses of Index are discussed below.



**Information** – The index reflects the general market trend for a period of time. The index is a broad representation of the country’s state of economy. A stock market index that is up indicates people are optimistic about the future. Likewise when the stock market index is down it indicates that people are pessimistic about the fu-

ture.

For example the Nifty value on 1st of January 2014 was 6301 and the value as of 24th June 2014 was 7580. This represents a change of 1279 points in the index of 20.3% increase. This simply means that during the time period under consideration, the markets have gone up quite significantly indicating a strong optimistic economic future.

The time frame for calculating the index can be for any length of time.. For example, the Index at 9:30 AM on 25th June 2014 was at 7,583 but an hour later it moves to 7,565. A drop of 18 points during this period indicates that the market participants are not too enthusiastic.



**Benchmarking** – For all the trading or investing activity that one does, a yardstick to measure the performance is required. Assume over the last 1 year you invested Rs.100,000/- and generated Rs.20,000 return to make your total corpus Rs.120,000/- . How do you think you performed? Well on the face of it, a 20% return looks great.

However what if during the same year Nifty moved to 7,800 points from 6,000 points generating a return on 30%?

Well suddenly it may seem to you, that you have underperformed the market! If not for the Index you can't really figure out how you performed in the stock market. You need the index to benchmark the performance of a trader or investor. Usually the objective of market participants is to outperform the Index.



**Trading** - Trading on the index is probably one of most popular uses of the index. Majority of the traders in the market trade the index. They take a broader call on the economy or general state of affairs, and translate that into a trade.

For example imagine this situation. At 10:30 AM the Finance Minister is expected to deliver his budget speech. An hour before the announcement Nifty index is at 6,600 points. You expect the budget to be favorable to the nation's economy. What do you think will happen to the index? Naturally the index will move up. So in order to trade your point of view, you may want to buy the index at 6,600. After all, the index is the representation of the broader economy.

So as per your expectation the budget is good and the index moves to 6,900. You can now book your profits, and exit the trade at a 300 points profit! Trades such as these are possible through what is known as 'Derivative' segment of the markets. We are probably a bit early to explore derivatives, but for now do remember that index trading is possible through the derivative markets.



**Portfolio Hedging** – Investors usually build a portfolio of securities. A typical portfolio contains 10 – 12 stocks which they would have bought from a long term perspective. While the stocks are held from a long term perspective they could foresee a prolonged adverse movement in the market (2008) which could potentially erode the capital in the portfolio. In such a situation, investors can use the index to hedge the portfolio. We will explore this topic in the risk management module.

## 7.4 - Index construction methodology

It is important to know how the index is constructed /calculated especially if one wants to advance as an index trader. As we discussed, the Index is a composition of many stocks from different sectors which collectively represents the state of the economy. To include a stock in the index it should qualify certain criteria. Once qualified as an index stock, it should continue to qualify on the stated criteria. If it fails to maintain the criteria, the stock gets replaced by another stock which qualifies the prerequisites.

Based on the selection procedure the list of stocks is populated. Each stock in the index should be assigned a certain weightage. Weightage in simpler terms define how much importance a certain stock in the index gets compared to the others. For example if ITC Limited has 7.6% weightage on Nifty 50 index, then it is as good as saying that the 7.6% of Nifty's movement can be attributed to ITC.

The obvious question is - How do we assign weights to the stock that make up the Index?

There are many ways to assign weights but the Indian stock exchange follows a method called **free float market capitalization**. The weights are assigned based on the free float market capitalization of the company, larger the market capitalization, higher the weight.

Free float market capitalization is the product of total number of shares outstanding in the market, and the price of the stock.

For example company ABC has a total of 100 shares outstanding in the market, and the stock price is at 50 then the free float market cap of ABC is  $100 \times 50 = \text{Rs.}5,000$ .

At the time of writing this chapter, the following as per Table 7.1 are the 50 stocks in Nifty as per their weightage...

Table 7.1 - Nifty stocks as per their weightage

Sl No	Name of the company	Industry	Weightage (%)
1	ITC Limited	Cigarettes	7.60
2	ICICI Bank Ltd	Banks	6.55
3	HDFC Ltd	Housing Finance	6.45
4	Reliance Industry Ltd	Refineries	6.37
5	Infosys Ltd	Computer Software	6.26
6	HDFC Bank Ltd	Banks	5.98
7	TCS Ltd	Computer Software	5.08
8	L&T Ltd	Engineering	4.72
9	Tata Motors Ltd	Automobile	3.09
10	SBI Ltd	Banks	2.90
11	ONGC Ltd	Oil Exploration	2.73
12	Axis Bank Ltd	Banks	2.50
13	Sun Pharma Ltd	Pharmaceuticals	2.29
14	M&M Ltd	Automobiles	2.13
15	HUL Ltd	FMCG	1.87
16	Bharti Airtel Ltd	Telecom Services	1.70
17	HCL Technologies Ltd	Computer software	1.61
18	Tata Steel Ltd	Metal -Steel	1.42
19	Kotak Mahindra Bank Ltd	Banks	1.40

Sl No	Name of the company	Industry	Weightage (%)
20	Sesa Sterlite Ltd	Mining	1.38
21	Dr.Reddy's Lab Ltd	Pharmaceuticals	1.37
22	Wipro Ltd	Computer Software	1.37
23	Maruti Suzuki India Ltd	Automobile	1.29
24	Tech Mahindra Ltd	Computer Software	1.24
25	Hero Motocorp Ltd	Automobile	1.20
26	NTPC Ltd	Power	1.15
27	Power Grid Corp Ltd	Power	1.13
28	Asian Paints Ltd	Paints	1.10
29	Lupin Ltd	Pharmaceuticals	1.09
30	Bajaj Auto Ltd	Automobile	1.07
31	Hindalco Industries Ltd	Metal – Aluminum	0.95
32	Ultratech Cements Ltd	Cements	0.95
33	Indusind Bank Ltd	Banks	0.94
34	Coal India Ltd	Mining	0.93
35	Cipla Ltd	Pharmaceuticals	0.89
36	BHEL Ltd	Electrical Equipment	0.79

Sl No	Name of the company	Industry	Weightage (%)
37	Grasim Industries Ltd	Cements	0.79
38	Gail (India) Ltd	Gas	0.78
39	IDFC Ltd	Financial Services	0.74
40	Cairn India Ltd	Oil Exploration	0.72
41	United Sprits Ltd	Distillery	0.70
42	Tata Power Co.Ltd	Power	0.68
43	Bank of Baroda	Banks	0.63
44	Ambuja Cements Ltd	Cements	0.61
45	BPCL	Refineries	0.58
46	Punjab National Bank	Banks	0.55
47	NMDC Ltd	Mining	0.52
48	ACC Ltd	Cements	0.50
49	Jindal Steel & Power	Steel	0.38
50	DLF Ltd	Construction	0.34

As you can see, ITC Ltd has the highest weightage. This means the Nifty index is most sensitive to price changes in ITC Ltd, and least sensitive to price changes in DLF Ltd.

## 7.5 - Sector specific indices

While the Sensex and Nifty represent the broader markets there are certain indices that represents specific sectors. These are called the sectoral indices. For example the Bank Nifty on NSE represents the mood specific to the banking industry. The CNX IT on NSE represents the behavior of all the IT stocks in the stock markets. Both BSE and NSE have sector specific indexes. The construction and maintenance of these indices is similar to the other major indices.

---

## Key takeaways from this chapter

1. An index acts as a barometer of the whole economy
2. An index going up indicates that the market participants are optimistic
3. An index going down indicates that the market participants are pessimistic
4. There are two main indices in India – The BSE Sensex and NSE's Nifty
5. Index can be used for a variety of purposes – information, bench marking, trading and hedging.
6. Index trading is probably the most popular use of the index
7. India follows the free float market capitalization method to construct the index
8. There are sector specific indices which convey the sentiment of specific sectors



# Commonly Used Jargons



The objective of this chapter is to help you learn some of the common market terminologies, and concepts associated with it.

-  **Bull Market (Bullish)** – If you believe that the stock prices are likely to go up then you are said to be bullish on the stock price. From a broader perspective, if the stock market index is going up during a particular time period, then it is referred to as the bull market.
-  **Bear Market (Bearish)** – If you believe that the stock prices are likely to go down then you are said to be bearish on the stock price. From a broader perspective, if the stock market index is going down during a particular time period, then it is referred to as the bear market.
-  **Trend** - A term ‘trend’ usually refers to the general market direction, and its associated strength. For example, if the market is declining fast, the trend is said to be bearish. If the market is trading flat with no movement then the trend is said to be sideways.
-  **Face value of a stock** – Face value (FV) or par value of a stock indicates the fixed denomination of a share. The face value is important with regard to corporate action. Usually when dividends and stock split are announced they are issued keeping the face value in perspective. For example the FV of Infosys is 5, and if they announce an annual dividend of Rs.63 that means the dividend yield is 1260%<sup>s</sup> (63 divided by 5).



52 week high/low – 52 week high is the highest point at which a stock has traded during the last 52 weeks (which also marks a year) and likewise 52 week low marks the lowest point at which the stock has traded during the last 52 weeks. The 52 week high and low gives a sense of the range within which the stock has traded during the year. Many people believe that if a stock reaches 52 week high, then it indicates a bullish trend for the foreseeable future. Similarly if a stock has hits 52 week low, some traders believe that it indicates a bearish trend for a foreseeable future.



All time high/low – This is similar to the 52 week high and low, with the only difference being the all time high price is the highest price the stock has ever traded from the time it has been listed. Similarly, the all time low price is the lowest price at which the stock has ever traded from the time it has been listed.



Long Position – Long position or going long is simply a reference to the direction of your trade. For example if you have bought or intend to buy Biocon shares then you are said to be long on Biocon or planning to go long on Biocon respectively. If you have bought the Nifty Index with an expectation that the index will trade higher then essentially you have a long position on Nifty. If you are long on a stock or an index, you are said to be bullish.



Short Position – Going short or simply ‘shorting’ is a term used to describe a transaction carried out in a particular order. This is a slightly tricky concept. To help you understand the concept shorting, I’d like to narrate a recent incident that happened to me at work.

If you are a gadget enthusiast like me, you would probably know that Xiaomi (Chinese manufacturers of Smartphone) recently entered into an exclusive partnership with Flipkart to sell their flagship smart phone model called Mi3 in India. The price of Mi3 was speculated to be around Rs.14,000/- . If one wished to buy Mi3, he had to be a registered Flipkart user, the phone was not available for a non registered user, and the registration was open only for a short time. I had promptly registered to buy the phone, but my colleague Rajesh had not. Though he wanted to buy the phone, he could not because he had not registered on time.

Out of sheer desperation, Rajesh walked up to me, and made an offer. He said, he is willing to buy the phone from me at Rs. 16,500/- . Being a trader at heart, I readily agreed to sell him the phone! In fact I even demanded him to pay me the money right away.

After I pocketed the money, I thought to myself, what have I done?? Look at the situation I’ve put myself into? I’ve sold a phone to Rajesh, which I don’t own yet!!

But then, it was not a bad deal after all. I agree, I had sold a phone that I didn't own. However I could always buy the phone on Flipkart, and pass on the new unopened box to Rajesh. My only fear in this transaction was, what if the price of the phone is above Rs.16,500?? In that case I'd make a loss, and I'd regret entering into this transaction with Rajesh. For example if the phone was priced at Rs.18,000 my loss would be Rs.1,500 ( $18,000 - 16,500$ ).

However to my luck, the phone was priced at Rs.14,000/-, I promptly bought it on Flipkart, upon delivery, I handed over the phone to Rajesh, and in the whole process I made a clean profit of Rs.2,500/- ( $16500 - 14000$ )!

If you look at the sequence of transactions, first I sold the phone (that I didn't own) to Rajesh, and then I bought it later on Flipkart, and delivered the same to Rajesh. Simply put I had sold first, and bought it later!

This type of transaction is called a 'Short Trade'.

The concept of shorting is very counter intuitive simply because we are not used to 'shorting' in our day to day activity, unless you have a trader mentality :)

Going back to stock markets, think about this very simple transaction – on day 1 you buy shares of Wipro at Rs.405, two days later (day 3) the stock moves and you sell your shares at Rs.425. You made a profit of Rs.20/- on this transaction.

In this transaction your first leg of the trade was to buy Wipro at Rs.405, and the second leg was to sell Wipro at Rs.425, and you were bullish on the stock.

Going forward, on day 4, the stock is still trading at Rs.425, and you are now bearish on the stock. You are convinced that the stock will trade lower at Rs.405 in few days time. Now, is there a way you can profit out of your bearish expectation? Well, you could, and it can be done so by shorting the stock.

You sell the stock at Rs.425, and 2 days later assuming the stock trades at Rs.405, you buy it back.

If you realize the first leg of the trade was to sell at Rs.425, and the second leg was to buy the stock at Rs.405. This is always the case with shorting – you first sell at a price you perceive as high with an intention of buying it back at a lower price at a later point in time.

You have actually executed the same trade as buying at Rs.405 and selling at Rs.425 but in reverse order.

An obvious question you may have – How can one sell Wipro shares without owning it. Well you can do so, just like the way I sold a phone that I did not own.

When you first sell, you are essentially borrowing it from someone else in the market, and when you buy it back, you actually return the shares back. All this happens in the backend, and the stock exchange facilitates the process of borrowing, and returning it back.

In fact when you short a stock, it works so seamlessly that you will not even realize that you are borrowing it from someone else. From your perspective, all you need to know is that when you are bearish on the stock, you can short the stock, and the exchange takes care of borrowing the stock on your behalf. When you buy the stocks back, the exchange will ensure the stocks are returned back.

To sum it all up...

- a. When you short, you have a bearish view on the stock. You profit if the stock price goes down. After you short, if the stock price goes up, you will end up making a loss
- b. When you short you essentially borrow from another market participant, and you will have to deliver these shares back. You need not worry about the mechanics of this. The system will ensure all this happens in the background
- c. Shorting a stock is easy – either you call your broker and ask him to short the stock or you do it yourself by selecting the stock you wish to short, and click on sell
- d. For all practical purposes, if you want to short a stock, and hold the position for few days, it is best done on the derivatives markets
- e. When you are short, you make money when the stock price goes down. You will make a loss if the stock price goes up after you have shorted the stock.

To summarize long and short positions as per table 8.1 in the following page.....

Table 8.1- Long and short positions

Position	1st Leg	2nd Leg	Expectation	Make money when	You will lose money if
Long	Buy	Sell	Bullish	Stock goes up	Stock price drops
Short	Sell	Buy	Bearish	Stock goes down	Stock price goes up

 Square off – Square off is a term used to indicate that you intend to close an existing position. If you are long on a stock squaring off the position means to sell the stock. Please remember, when you are selling the stock to close an existing long position you are not shorting the stock!

When you are short on the stock, squaring off position means to buy the stock back. Remember when you buy it back, you are just closing an existing position and you are not going long!

Table 8.2 - Square off positions

When you are	Square off position is
Long	Sell the stock
Short	Buy the stock

 Intraday position – Is a trading position you initiate with an expectation to square off the position within the same day.

 OHLC – OHLC stands for open, high, low and close. We will understand more about this in the technical analysis module. For now, open is the price at which the stock opens for the day, high is the highest price at which the stock trade during the day, low is the lowest price at which the stock trades during the day, and the close is the closing price of the stock. For example, the OHLC of ACC on 17th June 2014 was 1486, 1511, 1467 and 1499.

 Volume – Volumes and its impact on the stock prices is an important concept that we will explore in greater detail in the technical analysis module. Volumes represent the total transactions (both buy and sell put together) for a particular stock on a particular day. For example, on 17th June 2014, the volume on ACC was 5, 33,819 shares.



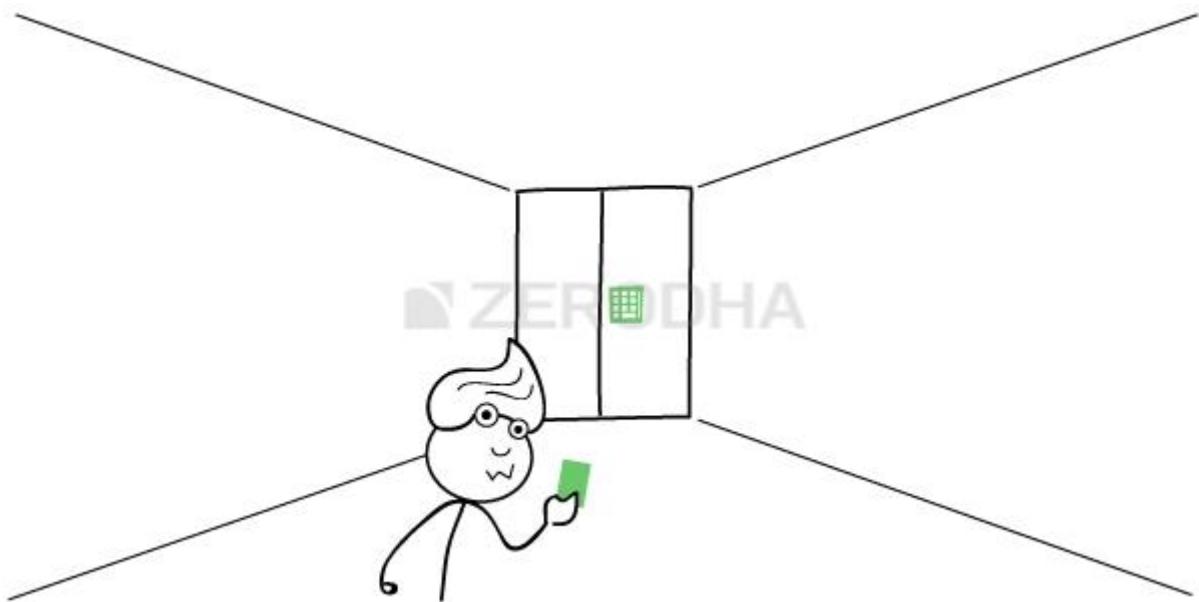
Market Segment – A market segment is a division within which a certain type of financial instrument is traded. Each financial instrument is characterized by its risk and reward parameters. The exchange operates in three main segments.

- a. Capital Market – Capital market segments offers a wide range of tradable securities such as equity, preference shares, warrants and exchange traded funds. Capital Market segment has sub segments under which instruments are further classified. For example, common shares of companies are traded under the equity segment abbreviated as EQ. So if you were to buy or sell shares of a company you are essentially operating in the capital market segment
- b. Futures and Options – Futures and Option, generally referred to as equity derivative segment is where one would trade leveraged products. We will explore the derivative markets in greater depth in the derivatives module
- c. Whole sale Debt Market – The whole sale debt market deals with fixed income securities. Debt instruments include government securities, treasury bills, bonds issued by a public sector undertaking, corporate bonds, corporate debentures etc.



## CHAPTER 9

# The Trading Terminal



### 9.1 – Overview

When a market participant wants to transact in the market, he can do so by opting one of the options:

1. Call the stock broker, and trade usually called “Call & Trade”
2. Use a web browser to access the markets
3. Use the trading software called the Trading Terminal

Each of the above method is a gateway to the exchanges. The gateway allows you to do multiple things such as transacting in shares, tracking your Profit & Loss, tracking market movements, following news, managing your funds, viewing stock charts, accessing trading tools etc. The purpose of this chapter is to familiarize you with the trading terminal (TT), and its interface.

A trading terminal is software which can be downloaded from your broker's website and is installed on your computer. The trading terminal is quite a user friendly

interface, as most of its functionalities are menu driven. To access the trading terminal, you need to have a trading account with your broker.

A good TT offers you numerous useful features. We will start by understanding a few basic features. To keep this chapter as practical as possible let us set two basic tasks to using the TT.

1. Buy 1 share of ITC, and
2. Track the price of Infosys

While we achieve the above two tasks, we will also learn about all the relevant concepts. For the purpose of this chapter, we will be using Zerodha's web platform '**Kite**'

## 9.2 – The login process

The trading terminal is quite sensitive as it contains all your trading account information. In order to ensure adequate security, brokers usually follow a stringent login process. The process involves entering your password and answering two secret questions, the answers to which only you know. The snapshot below shows this process.

The image consists of two side-by-side screenshots of a web application interface. Both screenshots feature a red and orange logo in the top right corner.

**Left Screenshot (Login Step):**

- Header: "Login to Kite"
- Input field: "DR5318"
- Input field: "Password"
- Large orange button: "Login"
- Link: "Forgot password?"

**Right Screenshot (Security Questions Step):**

- Header: "Security questions"
- Text: "What is your height in feet? (e.g. 5.4 4.8 etc)"
- Text: "What was the make of the first computer you owned? ( e.g. LG, Compaq etc)"
- Large orange button: "Continue"
- Link: "Forgot 2fa?"

## 9.3 – The Market watch

Once your login to the platform you will have to populate the ‘market watch’ with the stocks you are interested. Think about the market watch as a blank slate. Once the stock is loaded on the market watch you can easily transact and query information about it. A blank market watch looks like this (this is also the screen that you see once you log in)

The screenshot shows the Kite 3.0 platform's market watch section. At the top, there are two small boxes: one for 'Equity' showing 600.2 available balance and another for 'Commodity' showing 136.75 available balance. Below these, a message says 'Nothing here.' with a note to 'Use the search bar at the top to add some instruments'. A blue button labeled 'Add instruments' is visible. On the right, a promotional banner for 'Kite 3.0' features the text 'Welcome to the all new Kite 3.0' and buttons for 'Take a tour' and 'Learn more'. At the bottom, there is a navigation bar with numbers 1 through 5.

Keeping the first task in mind we will load ITC Ltd onto the market watch. To do this we simply have to type in the stock symbol ITC in the search bar and the drop down will show the stock in different exchanges(NSE/BSE)

A search dropdown for the symbol 'itc' is shown. It lists several options: 'ITC' (with a '+' button, a blue 'B' button, and an orange 'S' button), 'ITC-BE', 'ITC-DEP SETT NSE', 'ITC-BL', 'ITC', 'ITC', and 'ITC6'. Each entry has its exchange name (NSE or BSE) in a small box to the right.

Click on the Add symbol to add the stock to the marketwatch

NIFTY 50 10442.90 -0.01 % SENSEX 33762.71 -0.04 %

Q Search eg: gold mcx, infy bse, nifty fut

ITC -0.40 % 262.25

The marketwatch will display last traded price, percentage change of the stock

- The last traded price of the stock (LTP) – This gives us a sense of how much the stock is trading at the very moment
- Percentage change – This indicates the percentage points the LTP is varying with respect to the previous day close
- Some basic information that will be needed at this point would be:
- Previous day close – At what price did the stock close the previous day
- OHLC – Open, High, Low and Close gives us a sense of the range within which the stock is trading during the day
- Volumes – Gives a sense on how many shares are being traded at a particular point of time

You can find this information under Market Depth. If you hover over the stock name, you will find Buy, Sell, Market Depth and Stock Information. If you click on Marketdepth, you will find the above information along with the best bid and ask price ladder. We will be covering Bid and Ask price in the later part of the Chapter.

NIFTY 50 10442.00 -0.02 % SENSEX 33754.81 -0.07 %

Q Search eg: gold mcx, infy bse

Market Depth (D)

ITC

B S

...

BID	ORDERS	QTY.	OFFER	ORDERS	QTY.
262.15	16	5709	262.20	5	440
262.10	66	15890	262.25	4	135
262.05	31	6895	262.30	6	775
262.00	310	36656	262.35	14	3981
261.95	13	14979	262.40	12	5693
Total		8,33,523	Total		12,95,789

Open	265.90	High	265.90
Low	262.15	Close	263.30
Volume	27,31,135	Avg. price	263.39
LTQ	335		

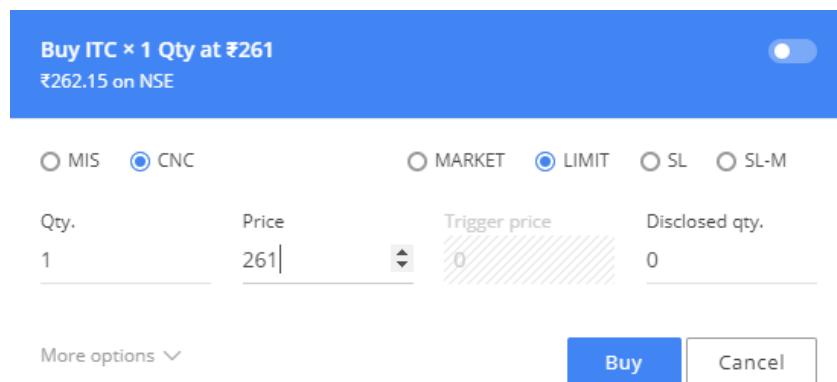
As you can see, the last traded price of ITC is Rs.262.25, it is trading -0.40% lower than the previous day close which is Rs.263.30. The open for the day was at Rs.265.90, the highest price and the lowest price at which the stock traded for the day was Rs.265.90 and Rs.262.15 respectively. The volume for the day is close to 27 lakh shares.

## 9.4 – Buying a stock through the trading terminal

Our goal is to buy 1 share of ITC. We now have ITC in our trading terminal, and we are convinced that buying ITC at Rs.261, which is roughly Rs.1.25 lesser than the last traded price is a great idea.

The first step for this process would be to invoke what is called a buy order form.

- Hover over the stock you want to Buy and click on the Buy Icon(B)
- This will invoke the Buy. When the buy order form is invoked, the following order form will appear on your screen.



A screenshot of a trading terminal's buy order form for ITC. The top bar shows 'Buy ITC x 1 Qty at ₹261' and '₹262.15 on NSE'. Below this, there are two rows of input fields. The first row contains 'Qty.' (1), 'Price' (261), 'Trigger price' (0), and 'Disclosed qty.' (0). The second row contains radio buttons for 'MIS', 'CNC' (selected), 'MARKET', 'LIMIT' (selected), 'SL', and 'SL-M'. At the bottom are 'More options ▾', a blue 'Buy' button, and a white 'Cancel' button.

The order form is pre populated with some information like the price and quantity. We need to modify this as per our requirement. Let us begin by the first drop down option on the top. By default, the exchange specified would be NSE.

The next entry is the ‘order type’. By clicking on the drop down menu you will see the following four options:

- Limit
- Market
- SL
- SL-Market

Let us understand what these options actually mean.

You can opt for a '**Limit**' order when you are very particular about the price you want pay for a stock. In our case, the last traded price of ITC is Rs.262.25 but say we want to limit our buy price to Rs.261. In such a situation where we are particular about the price we want to transact in, we can opt for a limit order price. If the price does not fall to Rs.261, then you will not get the shares. This is one of the drawbacks of a limit order.

You can also opt for a **market order** when you intend to buy at market available prices instead of a very specific price that you have in mind. So if you were to place a market order, as long as there are sellers available, your order will go through and ITC will be bought in the vicinity of Rs.262.25. Suppose the price goes up to Rs.265 coinciding with your market order placement, then you will get ITC at Rs.265. This means when you place a market order, you will never be sure of the price at which you would transact, and this could be quite a dangerous situation if you are an active trader.

**A stop loss order** protects you from an adverse movement in the market after initiating a position. Suppose you buy ITC at Rs.262.25 with an expectation that ITC will hit Rs.275 in the near future. But instead, what if the price of ITC starts going down? We can protect ourselves firstly by defining what would be the worst possible loss you are willing to take. For instance, in the example let us assume you don't want to take a loss beyond Rs.255

This means you have gone long on ITC at Rs.262.25 and the maximum loss you are willing to take on this trade is Rs.6 (255). If the stock price drops down to Rs.255, the stop loss order gets active and hits the exchange and you will be out of the loss making position. As long as the price is above 255 the stop loss order will be dormant.

A stop loss order is a passive order. In order to activate it, we need to enter a trigger price. A trigger price, usually above the stop loss price acts as a price threshold and only after crossing this price the stop loss order transitions from a passive order to an active order.

Going with the above example:

We are long at Rs.261. In case the trade goes bad we would want to get rid of the position at Rs.255, therefore 255 is the stop loss price. The trigger price is specified so

that the stoploss order would transition from passive to active order. The trigger price has to be higher than the stop loss price. We can set this to Rs.256. If the price drops to Rs.256 from 255 the stop loss order gets active.

Going back to the main buy order entry form, once the order type is selected we now move directly to the quantity. Remember the task is to buy 1 share of ITC; hence we enter 1 in the quantity box. We ignore the trigger price and disclosed quantity for now. The next thing to select would be the product type.

Select CNC for delivery trades. Meaning if your intention is to buy and hold the shares for multiple days/months/years then you need to ensure the shares reside in your demat account. Selecting CNC is your way of communicating this to your broker.

Select NRML or MIS if you want to trade intraday. MIS is a margin product; we will understand more on this when we take up the module on derivatives.

Once these details are filled in your order form, the order is good to hit the markets. The order gets transmitted to the exchange as soon as you press the submit button on the order form. A unique order ticket number is generated against your order.

Once the order is sent to the exchange it will not get executed unless the price hits Rs.261. As soon as the price drops to Rs.26 (and assuming there are sellers willing to sell 1 shares) your order gets through, and is eventually executed. As soon as your order is executed, you will own 1 shares of ITC.

## 9.5 – The order book and Trade book

The order book and trade book are two online registers within trading terminal. The order book keeps track of all the orders that you have sent to the exchange and the trade book tracks all the trades that you have transacted during the day.

The order book has all the details regarding your order. You can navigate to the orderbook by clicking the Orders tab

	Time	Type	Instrument	Product	Qty.	LTP	Price	Status
<input type="checkbox"/>	14:01:17	BUY	ITC NSE	CNC	0 / 1	262.20	261.00	OPEN

The order book provides the details of the orders you have placed. You should access the order book to:

- Double check the order details – quantity, price, order type, product type
- Modify the orders – For example if you want to modify the buy order from 332 to 333 you can do so from the order book
- Check Status – After you have placed the order you can check the status of the same. The status would state open if the order is completed partially, it would state completed if the order has been completed, and it would state rejected if your order has been rejected. You can also see the details of the rejection in the order book.

If you notice, there is an open order to buy 1 share of ITC at Rs.261.

If you hover over the pending orders, you can find the option to modify or cancel the order

The screenshot shows the 'Open orders (1)' section of the Zerodha Kite interface. A single buy order for ITC NSE is listed. The 'Instrument' column has a dropdown button labeled 'Options' with a three-dot icon, which is currently open, displaying a context menu with options like 'Cancel', 'Modify', 'Repeat order', 'Info', 'Chart', 'Market depth', and 'Stock widget'. The order details are: Time: 14:01:17, Type: BUY, Instrument: ITC NSE, Product: CNC, Qty.: 0 / 1, LTP: 262.10, Price: 261.00, Status: OPEN.

By clicking ‘modify’ the order form will be invoked and you can make the desired changes to the order.

Once the order has been processed and the trade has been executed, the trade details will be available in the trade book. You can find the trade book just below the orderbook

Here is a snapshot of the trade book

Trades ↗ (1)							Search	Historical	Download
Trade ID	Time	Type	Instrument	Qty.	Avg. Price	Product			
27264787	14:11:17	BUY	ITC NSE	1	262.2	CNC			

The trade book confirms that the user executed an order to buy 1 share of ITC at Rs 262.2. Also notice a unique exchange order number is generated for the trade.

So with this our first task is complete!

You now officially own 1 share of ITC. This share will reside in our DEMAT account till you decide to sell it.

The next task is to track the price of Infosys. The first step would be to add Infosys to the market watch. We can do this by searching for Infosys in the search box.

NIFTY 50 10444.80 0.01 % SENSEX 33767.75 -0.03 %

Q infy		
INFY	INFOSYS	NSE
INFY-BE	INFOSYS	NSE
INFY-BL	INFOSYS	NSE
INFY	INFOSYS	BSE

The trading symbol for Infosys is Infy. Once we select Infy, we press Add to add it to the market watch.

NIFTY 50 10445.25 0.01 % SENSEX 33771.07 -0.02 %

Q Search eg: gold mcx, infy bse, nifty fut

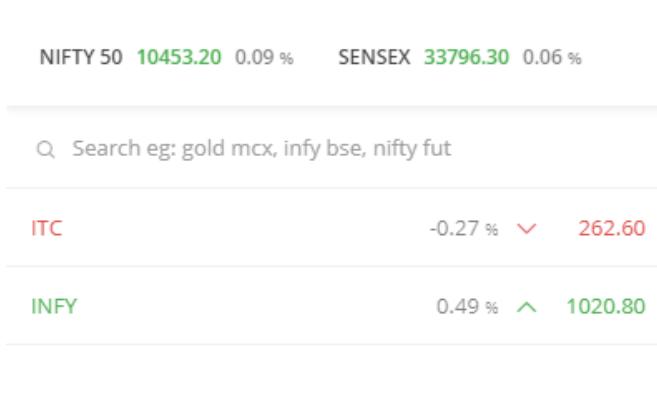
ITC	-0.46 %	▼	262.10
INFY	-0.16 %	▼	1014.20
BID	ORDERS	QTY.	OFFER
1014.20	2	35	1014.30
1014.00	5	827	1014.40
1013.80	1	192	1014.50
1013.75	1	800	1014.60
1013.70	1	192	1014.65
Total		2,57,370	Total
Open		1014.80	High
Low		998.40	Close
Volume		36,93,244	Avg. price
LTQ		33	

We can now track some live information about Infosys. The last trade price is Rs.1014.75; the stock is down -0.11% from its previous days close of Rs.1015.85. Infosys opened the day at Rs.1014.80 made a low of Rs.998.40 and a high of Rs.1028.95. The volumes were 3.6 million shares.

Please note, while the open price will be fixed at Rs. 1014.80 the high and low prices change as and when the price of Infosys changes. For example, if Infosys moves from Rs.1014.2 to Rs.1050, then the high price will reflect Rs. 1050 as the new high.

Notice that the LTP of Infosys is highlighted in green and ITC in red. If the current LTP is more than the previous LTP, the cell is highlighted in green else in red.

Have a look at the snapshot below:



The price of Infosys dropped from 1014.20 to 1020.80, and hence the colour changed to red from blue.

Besides the basic information about the LTP, OHLC, and volume we can also dig a bit deeper to understand the real time market participation. To see this, we need to invoke what is called a ‘Market Depth’ window also referred to as the snap quote window. As you can see, there is a lot of information in the snap quote window. I specifically want to draw your attention to the numbers in blue and red called the Bid and Ask prices.

You can use Kite by Zerodha more effectively by going through its **user manual**

## 9.6 – The Bid and Ask Price

If you want to buy a share, you obviously need to buy it from a seller. The seller will sell the shares at a price that he thinks is fair enough. The price that the sellers **ask you** is called the '**Ask Price**'. The ask price is highlighted in red. Let us analyse this in a bit more detail.

By default, the snap quote window displays the top 5 bid and asks prices. In the table above we have the top 5 ask prices.

The first ask price is Rs.3294.80. At this particular moment, this is the best price to buy Infosys and there are only 2 shares available at this price being offered by 2 different sellers (both of them are selling 1 share each). The next best price is Rs.3294.85. At this price there are 4 shares available being offered by 2 different sellers. The third best price is Rs.3295 at which 8 shares are available, and this price is offered by two sellers. So on and so forth.

As you notice, the higher the ask price the lower is the priority. For example, at 5<sup>th</sup> position is an ask price of Rs.3296.25 for 5 shares. This is because the stock exchanges give priority to sellers willing to sell their shares at the least possible price.

Notice even if you want to buy 10 shares at Rs.3294.8 you can only buy 2 shares because there are only 2 sellers at Rs.3294.8. However, if you are not particular about the price (aka limit price) you can place a market order. When you place a market order at this stage, this is what happens:

- 2 shares are bought @ Rs.3294.8
- 4 shares are bought @ Rs.3294.85
- 4 shares are bought @ Rs.3295.00

The 10 shares will be bought at three different prices. Also in the process the LTP of Infosys will jump to Rs.3295 from Rs.3294.8

If you want to sell a share, you obviously need to sell it to a buyer willing to buy it from you. The buyer will buy the shares at a price that he thinks is fair enough. The price that the buyer demands is called the ‘bid price’. The bid price is highlighted in blue. Let us analyse this part in a bit more detail:

Again by default the snap quote window displays the top five bid prices. Notice the best price at which you can sell shares is at Rs.3294.75, and at this price you can only sell 10 shares as there are only 5 buyers willing to buy from you.

If you were to sell 20 Infosys shares at market price the following would be the execution pattern:

- 10 shares sold @ Rs.3294.75
- 6 shares sold @ Rs.3294.20
- 1 share sold @ Rs.3294.15
- 3 shares sold @ Rs.3293.85

So in essence, the bid and ask prices gives you information about the top 5 prices at which the buyers and sellers are stacked up. It is extremely important for you to understand how the buyers and sellers are placing their trades especially if you are an intraday trader.

### **9.7 – Conclusion**

The trading terminal is your gateway to markets. Trading terminal has many features that are useful to traders. We will explore these features as we progress through the various learning modules. For now, you should be in a position to understand how to set up a market watch, transact (buy and sell) in stocks, view the order and trade book, and understand the market depth window.

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

1. A trading terminal is your gateway to markets. You must know the operations of a trading terminal if you aspire to become an active trader
2. You can load the stock you are interested in on the market watch to track all the relevant information
3. Some of the basic information on market watch is – LTP, % change, OHLC and volumes
4. To buy a stock you need to invoke a buy order form by pressing ‘B’ key. Likewise, to sell a stock you need to invoke a sell order form by pressing ‘S’ key
5. You choose a limit order type when you are keen on transacting at a particular price, else you can opt for a market order
6. You choose CNC as product type if you want to buy and hold the stock across multiple days. If you want to trade intraday, you choose NRML or MIS

7. An order book lets you track orders that are both open and completed. You can modify the open orders by clicking on the modify button at the bottom of the order book
8. Once the order is completed you can view the trade details in the trade book. In case of a market order then you can view the exact trade price by accessing the trade book
9. You can press the F6 key to invoke the market depth or snap quote window. The market watch enables you to see bid and ask prices
10. The bid & ask prices refers to the price at which you can transact. By default, the top 5 bid and ask prices are displayed in the market depth window at all times.

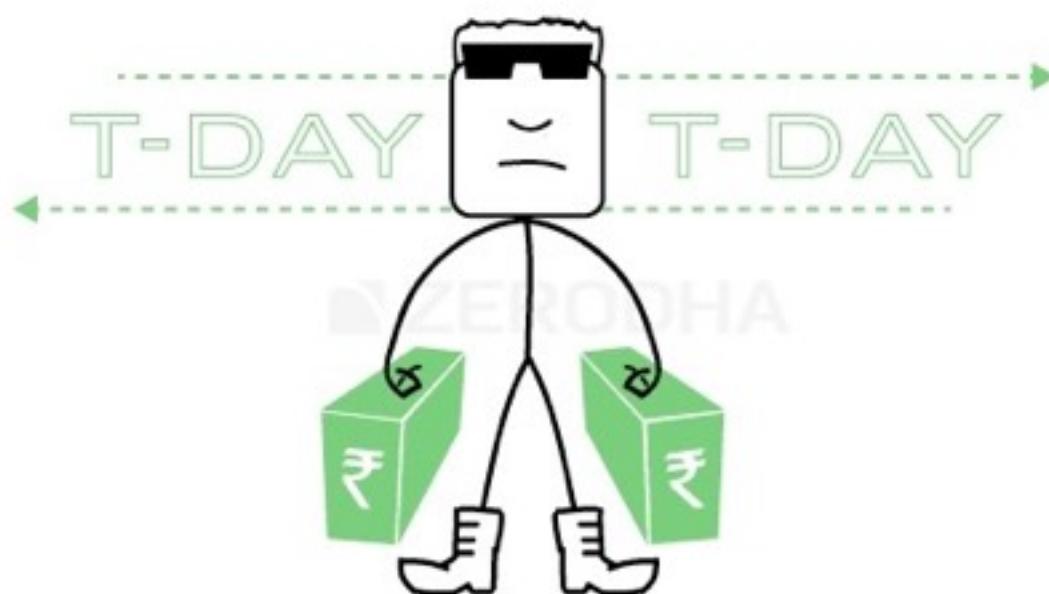
# Clearing and Settlement

## 10.1 - Overview

While the topic on clearing and settlement is quite theoretical it is important to understand the mechanics behind it. As a trader or an investor you need not actually worry about how the trades are cleared and settled as there are professional intermediaries to carry out this function seamlessly for you.

However the lack of understanding of the clearing and settlement process could leave a void, and would not give a sense of completeness to the learning process. Hence for this reason we will explore what happens behind the scene from the time you buy a stock to the time it hits your DEMAT account.

We will keep this very practical with a clear emphasis on what you as a market participant should really know.



## 10.2 - What happens when you buy a stock?

*Day 1 – The trade (T Day), Monday*

Assume on 23rd June 2014 (Monday) you buy 100 shares of Reliance Industries at Rs.1,000/- per share. The total buy value is Rs.100,000/- ( $100 * 1000$ ). The day you make the transaction is referred to as the trade date, represented as ‘T Day’.

By the end of trade day your broker will debit Rs.100,000/- and the applicable charges towards your purchase. Assuming the trade is executed through Zerodha, the applicable charges would be as follows as per Table 10.1:

TABLE 10.1 - Charge List

Sl No	Chargeable Item	Applicable Charges	Amount
1	Brokerage	0.1% or Rs.20/- whichever is lower	20/-
2	Security Transaction Charges	0.1% of the turnover	100/-
3	Transaction Charges	0.00325% of the turnover	3.25/-
4	Service Tax	12% of Brokerage + Transaction charges	2.79/-
5	Education Cess	2% of service tax	0.0558/-
6	Higher education Cess	1% of service tax	0.0279/-
7	SEBI Charges	Rs.20 per crore of transaction	0.2/-
	<b>Total</b>		<b>126.32/-</b>

So an amount of Rs.100,000/- plus Rs.126.32/- (which includes all the applicable charges) totaling Rs.100,126.32/- will be debited from your trading account the day you make the transaction. Do remember, the money goes out of your account but the stock has not come into your DEMAT account yet.

Also, on the same day the broker generates a ‘contract note’ and sends you a copy of the same. A contract note is like a bill generated detailing every transaction you made. This is an important document which is worth saving for future reference. A contract note typically shows a break up of all transactions done during the day along with the trade reference number. It also shows the breakup of charges charged by the broker.

#### *Day 2 – Trade Day + 1 (T+ day, Tuesday)*

The day after you made the transaction is called the T+1 day. On T+1 day you can sell the stock that you purchased the previous day. If you do so, you are basically doing a quick trade called “Buy Today, Sell Tomorrow” (BTST) or “Acquire Today, Sell Tomorrow” (ATST). Remember the stock is not in your DEMAT account yet. Hence, there is a risk involved, and you could be in trouble for selling a stock that you don’t really own. This doesn’t mean, every time you do a BTST trade you end up in trouble, but it does once in a way especially when you trade B group and illiquid stocks. The reason why this happens is a little convoluted, and we deliberately will not touch this topic now.

If you are starting fresh in the markets, I would suggest you do not do BTST trades unless you understand the risk involved.

From your perspective nothing happens on T+1 day. However in the background the money required to purchase the shares is collected by the exchange along with the exchange transaction charges and Security transaction tax.

#### *Day 3 – Trade Day + 2 (T+2 day, Wednesday)*

On day 3 or the T+2 day, around 11 AM shares are debited from the person who sold you the shares and credited to the brokerage with whom you are trading, who will in turn credit it to your DEMAT account by end of day. Similarly money which was debited from you is credited to the person who sold the shares.

The shares will now start reflecting in the DEMAT account indicating that you own 100 shares of Reliance.

So for all practical purposes if you buy a share on day T Day, you can expect to receive the shares in your DEMAT account only by end of T+2 day. The shares are available for transaction on T+3day.

### 10.3 - What happens when you sell a stock?

The day you sell the stocks is again called the trade day, represented as ‘T Day’. The moment you sell the stock from your DEMAT account, the stock gets blocked .Before the T+2 day the blocked shares are given to the exchange. On T+2 day you would receive the funds from the sale which will be credited to your trading account after deduction of all applicable charges.

---

## Key takeaways from this chapter

1. The day you make a transaction, it is called the trade date, represented as ‘T Day’
  2. The broker is required to issue you a contract note for all the transactions carried out by end of T day
  3. When you buy a share, the same will be reflected in your DEMAT account by end of T+2 day
  4. All equity/stock settlements in India happen on a T+2 basis
  5. When you sell shares, the shares are blocked immediately and the sale proceeds credited again on T +2 day
- 

# Five Corporate Actions and its Impact on Stock Prices



## 11.1 - Overview

Corporate actions are initiatives taken up by a corporate entity that bring in a change to its stock. There are many types of corporate actions that an entity can choose to initiate. A good understanding of these corporate actions gives a clear picture of the company's financial health, and also to determine whether to buy or sell a particular stock.

In this chapter, we will be looking into the four most important corporate actions and their impact on stock prices.

A corporate action is initiated by the board of directors, and approved by the company's shareholders.



## 11.2 - Dividends

Dividends are paid by the company to its shareholders. Dividends are paid to distribute the profits made by the company during the year. Dividends are paid on a per share basis. For example, during the financial year 2012-13 Infosys had declared a dividend of Rs.42 per share. The dividend paid is also expressed as a percentage of the face value. In the above case, the face value of Infosys was Rs.5/- and the dividend paid was Rs.42/- hence the dividend payout is said to be 840% ( $42/5$ ).

It is not mandatory to pay out the dividends every year. If the company feels that instead of paying dividends to shareholders they are better off utilizing the same cash to fund new project for a better future, then can do so.

Besides, the dividends need not be paid from the profits alone. If the company has made a loss during the year but it does hold a healthy cash reserve, then the company can still pay dividends from its cash reserves.

Sometimes distributing the dividends may be the best way forward for the company. When the growth opportunities for the company have exhausted and the company holds excess cash, it would make sense for the company to reward its shareholders thereby repaying the trust the shareholders hold in the company.

The decision to pay dividend is taken in the Annual General Meeting (AGM) during which the directors of the company meet. The dividends are not paid right after the announcement. This is because the shares are traded throughout the year and it would be difficult to identify who gets the dividend and who doesn't. The following timeline would help you understand the dividend cycle.



*Dividend Declaration Date:* This is the date on which the AGM takes place and the company's board approves the dividend issue

*Record Date:* This is the date on which the company decides to review the shareholders register to list down all the eligible shareholders for the dividend. Usually the time difference between the dividend declaration date and record date is at least 30 days

*Ex Date/Ex Dividend date:* The ex dividend date is normally set two business days before the record date. Only shareholders who own the shares before the ex dividend date are entitled to the dividend. This is because in India the normal settlement is on T+2 basis. So for all practical purposes if you want to be entitled for dividend you need to ensure you buy the shares before the ex dividend date.

*Dividend Payout Date:* This is the day on which the dividends are paid out to shareholders listed in the register of the company.

*Cum Dividend:* The shares are said to be cum dividend till the ex dividend date.

When the stock goes ex dividend, usually the stock drops to the extent of dividends paid. For example if ITC (trading at Rs. 335) has declared a dividend of Rs.5. On ex date the stock price will drop to the extent of dividend paid, and as in this case the price of ITC will drop down to Rs.330. The reason for this price drop is because the amount paid out no longer belongs to the company.

Dividends can be paid anytime during the financial year. If it's paid during the financial year it is called the interim dividend. If the dividend is paid at the end of the financial year it is called the final dividend.

### 11.3 - Bonus Issue



A bonus issue is a stock dividend, allotted by the company to reward the shareholders. The bonus shares are issued out of the reserves of the company. These are free shares that the shareholders receive against shares that they currently hold. These allotments typically come in a fixed ratio such as, 1:1, 2:1, 3:1 etc.

If the ratio is 2:1 ratio, the existing shareholders get 2 additional shares for every 1 share they hold at no additional cost. So if a shareholder owns 100 shares then he will be issued an additional 200 shares, so his total holding will become 300 shares. When the bonus shares are issued, the number of shares the shareholder holds will increase but the overall value of investment will remain the same.

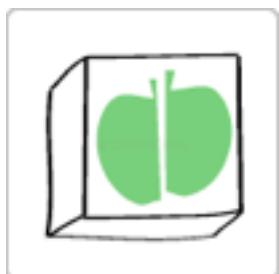
To illustrate this kindly refer to Table 11.1 in the following page, let us assume a bonus issue on different ratios – 1:1, 3:1 and 5:1

Table 11.1 - Bonus Issue

Bonus Issue	No of shares held before bonus	Share price before Bonus issue	Value of Investment	Number of shares held after Bonus	Share price after Bonus issue	Value of Investment
1:1	100	75	7,500	200	37.5	7500
3:1	30	550	16,500	120	137.5	16,500
5:1	2000	15	30,000	12,000	2.5	30,000

Similar to the dividend issue there is a bonus announcement date, ex bonus date, and record date.

Companies issue bonus shares to encourage retail participation, especially when the price per share of a company is very high and it becomes tough for new investors to buy shares. By issuing bonus shares, the number of outstanding shares increases, but the value of each share reduces as shown in the example above.



## 11.4 - Stock Split

The word stock split- for the first time sounds weird but this happens on a regular basis in the markets. What this means is quite obvious – the stocks that you hold actually are split!

When a stock split is declared by the company the number of shares held increases but the investment value/market capitalization remains the same similar to bonus issue. The stock is split with reference to the face value. Suppose the stock's face value is Rs.10, and there is a 1:1 stock split then the face value will change to Rs.5. If you owned 1 share before split you would now own 2 shares after the split.

We will illustrate this with an example, refer to Table 11.2 in the following page:

Table 11.2 - Stock Split

Split Ratio	Old FV	No of shares you own before split	Share Price before split	Investment Value before split	New FV	No of shares you own after split	Share Price after the split	Investment value after split
1:1	10	100	900	90,000	5	200	450	90,000
1:5	10	100	900	90,000	2	500	180	90,000

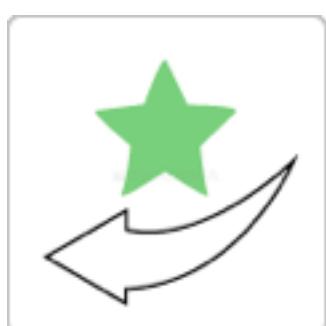
Similar to bonus issue, stock split is usually to encourage more retail participation by reducing the value per share.



## 11.5 - Rights Issue

The idea behind a rights issue is to raise fresh capital. However instead of going public, the company approaches their existing shareholders. Think about the rights issue as a second IPO but for a select group of people (existing shareholders). The rights issue could be an indication of a promising new development in the company. The shareholders can subscribe to the rights issue in the proportion of their share holding. For example 1:4 rights issue means for every 4 shares a shareholder owns, he can subscribe to 1 additional share. Needless to say the new shares under the rights issue will be issued at a lower price than what prevails in the markets.

However, a word of caution – The investor should not be swayed by the discount offered by the company but they should look beyond that. Rights issue is different from bonus issue as one is paying money to acquire shares. Hence the shareholder should subscribe only if he or she is completely convinced about the future of the company. Also, if the market price is below the subscription price/right issue price it is obviously cheaper to buy it from the open market.



## 11.6 Buyback of shares

A buyback can be seen as a method for company to invest in itself by buying shares from other investors in the market. Buybacks reduce the number of shares outstanding in the market, however buyback of shares is an important method of corporate restructuring.

There could be many reasons why corporates choose to buy back shares..

1. Improve the profitability on a per share basis
2. To consolidate their stake in the company
3. To prevent other companies from taking over
4. To show the confidence of the promoters about their company
5. To support the share price from declining in the markets

When a company announces a buy back, it signals the company's confidence about itself. Hence this is usually a positive for the share price.

---

## Key takeaways from this chapter

1. Corporate actions has an impact on stock prices
2. Dividends are means of rewarding the shareholders. Dividend is announced as a percentage of face value
3. If you aspire to get the dividend you need to own the stock before the ex dividend date
4. A bonus issue is a form of stock dividend. This is the company's way of rewarding the shareholders with additional shares
5. A stock split is done based on the face value. The face value and the stock price changes in proportion to the change in face value
6. Rights issue is way through which the company raises fresh capital from the existing shareholders. Subscribe to it only if you think it makes sense
7. Buy back signals a positive outlook of the promoters. This also conveys to the shareholders that the promoters are optimistic of the company's prospects.



# Key Events and Their Impact on Markets

## 12.1 - Overview

For a market participant transacting just based on company specific information may not be sufficient. It is also important to understand the events that influence the markets. Various outside factors, economic and/or non-economic events have a key impact on the performance of stocks and markets in general.

In this chapter we will try to understand some of these events, and also how the stock market reacts to them.



## 12.2 - Monetary Policy

The monetary policy is a tool with which the Reserve Bank of India (RBI) controls the money supply by controlling the interest rates. They do this by tweaking the interest rates. RBI is India's central bank. World over every country's central bank is responsible for setting the interest rates.

While setting the interest rates the RBI has to strike a balance between growth and inflation. In a nutshell – if the interest rates are high that means the borrowing rates are high (particularly for corporations). If corporate can't borrow easily they cannot grow. If corporations don't grow, the economy slows down.

On the other hand when the interest rates are low, borrowing becomes easier. This translates to more money in the hands of the corporations and consumers. With more money there is increased spending which means the sellers tend to increase prices leading to inflation.

In order to strike a balance, the RBI has to consider all the factors and should carefully set a few key rates. Any imbalance in these rates can lead to an economic chaos. The key RBI rates that you need to track are as follows:

*Repo Rate* – Whenever banks want to borrow money they can borrow from the RBI. The rate at which RBI lends money to other banks is called the repo rate. If repo rate is high that means the cost of borrowing is high, leading to a slow growth in the economy. Currently, the repo rate in India is 8%. Markets don't like the RBI increasing the repo rates.

*Reverse repo rate* – Reverse Repo rate is the rate at which RBI borrows money from banks. When banks lend money to RBI they are certain that RBI will not default, and hence they are happier to lend their money to RBI as opposed to a corporate. However when banks choose to lend money to the RBI instead of the corporate entity, the supply of money in the banking system reduces. An increase in reverse repo rate is not great for the economy as it tightens the supply of money. The reverse repo rate is currently at 7%.

*Cash reserve ratio (CRR)* – Every bank is mandatorily required to maintain funds with RBI. The amount that they maintain is dependent on the CRR. If CRR increases then more money is removed from the system, which is again not good for the economy.

The RBI meets every quarter to review the rates. This is a key event that the market watches out for. The first to react to rate decisions would be interest rate sensitive stocks across various sectors such as – banks, automobile, housing finance, real estate, metals etc.

## 12.3 - Inflation

Inflation is a sustained increase in the general prices of goods and services. Increasing inflation erodes the purchasing power of money. All things being equal, if the cost of 1 KG of onion has increased from Rs.15 to Rs.20 then this price increase is attributed to inflation. Inflation is inevitable but a high inflation rate is not desirable as it could lead to economic uneasiness. A high level of inflation tends to send a bad signal to markets. Governments work towards cutting down the inflation to a manageable level. Inflation is generally measured using an index. If the index is going up by certain percentage points then it indicates rising inflation, likewise index falling indicates inflation cooling off.

There are two types of inflation indices – Wholesale Price Index (WPI) and Consumer Price Index (CPI).

*Wholesale Price Index (WPI)* – The WPI indicates the movement in prices at the wholesale level. It captures the price increase or decrease when they are sold between organizations as opposed to actual consumers. WPI is an easy and convenient method to calculate inflation. However the inflation measured here is at an institutional level and does not necessarily capture the inflation experienced by the consumer.

As I write this, the WPI inflation for the month of May 2014 stands at 6.01%.

*Consumer Price Index (CPI)*- The CPI on the other hand captures the effect of the change in prices at a retail level. As a consumer, CPI inflation is what really matters. The calculation of CPI is quite detailed as it involves classifying consumption into various categories and sub categories across urban and rural regions. Each of these categories is made into an index. This means the final CPI index is a composition of several internal indices.

The computation of CPI is quite rigorous and detailed. It is one of the most critical metrics for studying the economy. A national statistical agency called the Ministry of Statistics and Programme implementation (MOSPI) publishes the CPI numbers around the 2nd week of every month.

The CPI stands at 8.28% for the month of May 2014. Here is a chart for the inflation for the last one year in India.



As you can notice, the CPI inflation has kind of cooled off from the peak of 11.16% in November 2013. The RBI's challenge is to strike a balance between inflation and interest rates. Usually a low interest rate tends to increase the inflation and a high interest rate tends to arrest the inflation.

## 12.4 - Index of Industrial Production (IIP)

The Index of Industrial Production (IIP) is a short term indicator of how the industrial sector in the country is progressing. The data is released every month (along with inflation data) by Ministry of Statistics and Programme implementation (MOSPI). As the name suggests, the IIP measures the production in the Indian industrial sectors keeping a fixed reference point. As of today, India uses the reference point of 2004-05. The reference point is also called the base year.

Roughly about 15 different industries submit their production data to the ministry, which collates the data and releases it as an index number. If the IIP is increasing it indicates a vibrant industrial environment (as the production is going up) and hence a positive sign for the economy and markets. A decreasing IIP indicates a sluggish production environment, hence a negative sign for the economy and markets.

To sum up, an upswing in the industrial production is good for the economy and a downswing rings an alarm. As India is getting more industrialized, the relative importance of the Index of Industrial Production is increasing.

A lower IIP number puts pressure on the RBI to lower the interest rates. The following graph shows the change in IIP in percentage terms for the last 1 year.



## 12.5 - Purchasing Managers Index (PMI)

The Purchasing managers index (PMI) is an economic indicator which tries to capture the business activity across the manufacturing and service sectors in the country. This is a survey based indicator where the respondents – usually the purchasing managers indicate their change in business perception with respect to the previous month. A separate survey is conducted for the service and the manufacturing sectors. The data from the survey is consolidated on to a single index. Typical areas covered in the survey include factors such as new orders, output, business expectations and employment amongst others.

The PMI number usually oscillates around 50. A reading above 50 indicates expansion and below 50 indicates a contraction in the economy. And a reading at 50 indicates no change in the economy.

## 12.6 - Budget

The Budget is an event during which the Ministry of Finance discusses the country's finance in detail. The Finance Minister on behalf of the ministry makes a budget presentation to the entire country. During the budget, major policy announcements and economic reforms are announced which has an impact on various industries across the markets. Therefore the budget plays a very important role in the economy

To illustrate this further, one of the expectations for the budget (July 2014) was to increase the duties on cigarette. As expected, during the budget, the Finance Minister raised the duties on cigarette, and hence the prices of cigarettes were also increased. An increased cigarette price has a few implications:

1. Increased cigarette prices discourage smokers from buying cigarettes (needless to say this is a debatable) and hence the profitability of the cigarette manufacturing companies such as ITC decreases. If the profitability decreases then investors may want to sell shares of ITC.
2. If market participants start selling ITC, then the markets will come down because ITC is an index heavy weight.

In fact as a reaction to the budget announcement ITC traded 3.5% lower for this precise reason.

Budget is an annual event and it is announced during the last week of February. However under certain special circumstances such as a new government formation the budget announcement could be delayed.

## 12.7 - Corporate Earnings Announcement

This is perhaps one of the important events to which the stocks react. The listed companies (trading on stock exchange) are required to declare their earning numbers once in every quarter, also called the quarterly earning numbers. During an earnings announcement the corporate gives out details on various operational activities including..

1. How much revenue the company has generated?
2. How has the company managed its expense?
3. How much money the company paid in terms of taxes and interest charges?
4. What is the profitability during the quarter?

Besides some companies give an overview of what they expect from the upcoming quarters. This forecast is called the ‘corporate guidance’.

Invariably every quarter the first blue chip company to make the quarterly announcement is Infosys Limited. They also give out guidance regularly. Market participants keenly follow what Infosys has to say in terms of guidance as it has an overall impact on the markets.

The table below gives you an overview of the earning season in India:

Table 12.1 - Quarterly Earnings

Sl No	Months	Quarter	Result Announcement
1	April to June	Quarter 1 (Q1)	1st week of July
2	July to September	Quarter 2 (Q2)	1st week of Oct
3	October to December	Quarter 3 (Q3)	1st Week of Jan
4	January to March	Quarter 4 (Q4)	1st Week of April

Every quarter when the company declares their earnings, the market participants match the earnings with their own expectation of how much the company should have earned. The market participant's expectation is called the 'street expectation'.

The stock price will react positively if the company's earnings are better than the street expectation. On a similar logic, the stock price will react negatively if the actual numbers are below the street expectation.

If the street expectation and actual numbers match, more often than not the stock price tends to trade flat with a negative bias. This is mainly owing to fact that the company could not give any positive surprises.

---

## Key takeaways from this chapter

1. Markets and individual stocks react to events. Market participants should equip themselves to understand and decipher these events
2. Monetary policy is one of the most important economic event. During the monetary policy, review actions on repo, reverse repo, CRR etc are initiated
3. Interest rates and inflation are related. Increasing interest rates curbs inflation and vice versa
4. Inflation data is released every month by MOSPI. As a consumer, CPI inflation data is what you need to track
5. IIP measures the industrial production activity. Increase in IIP cheers the markets and lower IIP disappoints the market
6. PMI is a survey based business sentiment indicator. The PMI number oscillates around the 50 mark. Above 50 is good news to markets and PMI below 50 is not.
7. The Budget is an important market event where policy announcements and reform initiatives are taken. Markets and stocks react strongly to budget announcements
8. Corporate earnings are reported every quarter. Stocks react mainly due to the variance in actual number versus the street's expectation.



# Getting started!



Assuming you are done reading and understanding the entire 12 chapters in our very first module – **Introduction to stock markets**, you are now warmed up to dig deeper!

The objective of the first module is to give you quick hands on introduction to the stock markets. In our endeavor to introduce the stock markets to you, we have carefully selected concepts that you need to know, especially if you are absolutely new to markets. If you have many unanswered questions at this stage, it is a good sign. You will find your answers as we proceed to other modules.

At this stage, it is extremely important for you to understand why we have so many different learning modules, and how these modules are interrelated. To give you a head up, here are some of the modules that we will cover in Varsity.

1. Introduction to Stock Markets
2. Technical analysis
3. Fundamental Analysis
4. Futures Trading

- 5. Option Theory
- 6. Option Strategies
- 7. Quantitative Concepts
- 8. Commodity Markets
- 9. Risk Management & Trading Philosophy
- 10. Trading Strategies & Systems
- 11. Financial Modeling for Investment practice

## 13.1 - So many modules – how are they interrelated?

The idea of ‘Varsity at Zerodha’ is to put up a repository of high quality market related educational content. The content, will cover various aspects of fundamental analysis, technical analysis, derivatives, trading strategies, risk management, financial modeling etc. Each main topic is categorized as a module. If you are new to the markets, you could be wondering how each of these topics fit within the grand scheme of things.

To help you get a perspective, allow me to post a simple question to you.

In order to be successful in the markets, what according to you is the single most important factor? Success in markets is easily defined – if you make money consistently you are successful, and if you don’t you are not!

So if you were to answer this question for me, chances are you will think about factors such as risk management, discipline, market timing, access to information etc as the key to be successful in markets.

While one cannot deny the importance of these factors what is even more compelling and primary is developing a **point of view (POV)**.

A point of view is an art of developing a sense of direction on a stock or the markets in general. If you think the stock is going up, your POV is bullish hence you would be a buyer of the stock. Likewise if you think a stock is going down your POV is bearish therefore you would be a seller of the stock.

Having said that, how do you actually develop a point of view? How do you figure out if the stock is going up or down?

To develop a point of view, one needs to develop a systematic approach to analyze the markets. There are a few methods using which you can figure out/ analyze what to buy or sell. They are:

1. Fundamental Analysis (FA)
2. Technical Analysis (TA)
3. Quantitative Analysis (QA)
4. Outside views

Just to give you a preview, here is a typical illustration of a trader's thought process while developing a POV (whether to buy or sell stocks) based on a particular method of analysis -

**FA based POV** – The quarterly numbers looks impressive. The company has reported a 25% top line and 15% bottom-line growth. The company's guidance also looks positive. With all the fundamentals factors aligned, the stock looks bullish hence the stock is a buy.

**TA based POV** – The MACD indicator has turned bullish along with a bullish engulfing candlestick pattern, with that study the stock's short term sentiment looks positive therefore the stocks is a buy.

**QA based POV** – With the recent up move, the stock's price to earnings (PE) touched the 3rd standard deviation. There is only 1% chance for the PE to breach the 3rd standard deviation. Hence it is prudent to expect a reversion to mean; therefore the stock is a sell.

**Outside view** – The analyst on TV is recommending a buy on the stock therefore the stock is a buy.

The POV you take should always be based on your own analysis rather than an outsider's view, as more often than not one ends up regretting taking an action based on an outside view.

So after developing a POV what does one generally do? Does he straight away go and trade the point of view? Here is where the complexity of markets starts to kick in.

If the POV is bullish, you can choose to do one of the following:

1. Buy the stock in the spot market
2. Buy the stock in the derivatives markets.
  - a. Within derivatives you can choose to buy the futures
  - b. Or choose to trade via the option market

- i) Within the option market there are call options and put options.
- ii) You can also do a combination of call and put options to create a synthetic bullish trade

So what you choose to do after developing a POV is a totally a different ball game. Choosing the right instrument to trade which complements your POV is highly critical to profitable trading.

For example, if I'm extremely bullish on a stock from 1 year perspective then I'm better off doing a delivery trade. However if I'm out rightly bullish on the stock from a short term perspective (say 1 week) then I'd rather choose a futures instrument to trade.

If I'm bullish with constraints attached (example - I'm expecting the markets to bounce because of a great budget announcement, but I don't want to risk much) then it would be prudent to choose an options instrument.

So the message here is – the market participant should develop a point of view and complement the POV with the right trading instrument. A well researched POV combined with the right instrument to trade is a perfect recipe for market success.

Also by now, hopefully you have got a sense of how all the different modules in “Varsity” play an important role in assimilating the market.



So keeping this in background, go ahead and explore the content on **Varsity at Zerodha**.

The next two modules will explore concepts that will help us develop POV based on Technical and Fundamental Analysis.

After reading through these two modules you will get a sense of developing a point of view on markets. The later modules we will discuss the different trading instruments that you can choose to complement your point of view. As we progress along, we will ramp up the flow to help you start calibrating your trades with effective risk management techniques.



## CHAPTER 14

---

# Supplementary Note



## IPO, OFS, and FPO – How are they different?

### IPO

Initial Public Offering is when a company is introduced into the publicly traded stock markets for the very first time. In the IPO, the promoters of the company choose to offer a certain percentage of shares to the public. The reason for going public and the process of an IPO is explained in detail in Chapter 4 and 5.

The primary reason for going public is to raise capital which would be to fund expansion projects or cash out early investors. After the IPO is listed on the exchange and is traded in the secondary market, promoters of the company might still want additional capital for which there are three options available: Rights Issue, Offer for Sale and Follow-on Public Offer

## **Rights Issue**

The promoters can choose to raise additional capital from its existing shareholders by offering them new shares at a discounted price (generally lower than Market Price). The company offers new shares in proportion of shares already held by the shareholders. For example, a 1:4 Rights Issue would mean that for every 4 shares held 1 additional share is offered. Although this option looks good, it limits the company to raise the capital from a small number of investors who are already holding shares of the company and might not want to invest more. A rights issue leads to creation of new shares that are offered to the shareholders, which in turn, dilutes the value of the previous held shares.

An example of a Rights issue is of South Indian Bank which announced a 1:3(One share for every 3 held) issue at a price of Rs 14 which is 30% lower than the Market Price the stock was trading (Rs 20 as on Record date 17 Feb 2017). The bank offered 45.07 lakh shares to the existing shareholders.

Rights issue is covered in detail in Chapter 11 covering key Corporate Actions

## **OFS**

The promoters can choose to offer the secondary issue of shares to the whole market unlike a rights issue which is restricted to existing shareholders. The Exchange provides a separate window through the stock brokers for the Offer for Sale. The exchange allows company to route funds through OFS only if the Promoters want to sell out their holdings and/or to maintain minimum public shareholding requirement (For example, Govt. PSU have a public shareholding requirement of 25%).

There is a floor price set by the company, at or above which bids can be made by both Retail and Non-Retail investors. The shares are allotted, if bids are at cut-off price or above will be settled by the exchange into the investor Demat account in T+1 Days.

An example of an Offer for Sale is NTPC limited which offered a maximum of 46.35 million shares at a floor price of Rs 168 and was fully subscribed in the 2 day period. The OFS was held on 29th August 2017 for Non-Retail Investors and 30th August 2017.

## **FPO**

A FPO also has the same intent of raising additional capital after it has been listed but follows a different mechanism for the application and allotment of shares. Shares can be diluted and fresh shares can be created and offered in an FPO. Just like an IPO, a FPO requires that Merchant Bankers be appointed to create a Draft Red Herring Prospectus which has to be approved by SEBI after which bidding is allowed in a 3-5 day period. Investors can place their bids through ASBA and shares are allotted based on the Cut-off Price decided after the book building process. Since the introduction of OFS in 2012, FPOs are seldom used due to the lengthy process of approvals.

The company decides on a Price Band and the FPO is publicly advertised. Prospective investors can bid for the issue using ASBA portal through Internet Banking or apply offline through a Bank Branch. After the bidding process is complete, the cut-off price is declared based on the demand and the additional shares allotted are listed on the exchange for trading in the secondary markets.

An example of an FPO is of Engineers India Ltd which underwent an issue in February 2014 with a price band of Rs 145-Rs 150. The issue was oversubscribed by 3 times. The shares on the day of starting date of the issue were trading at Rs 151.1. The lower price band was at a 4.2% discount from the market price.

## **Difference between OFS and FPO**

- An OFS is used to offload the shares of Promoters while a FPO is used to fund new projects
- Dilution of shares is allowed in a FPO leading to change in Shareholding structure while OFS does not affect the number of authorized shares.
- Only the top 200 companies by Market Capitalisation are allowed to use the OFS route to raise funds while FPO option can be used by all listed companies
- Ever since OFS has been introduced by SEBI, FPO issues have come down and companies prefer to choose the OFS route to raise funds

## 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.

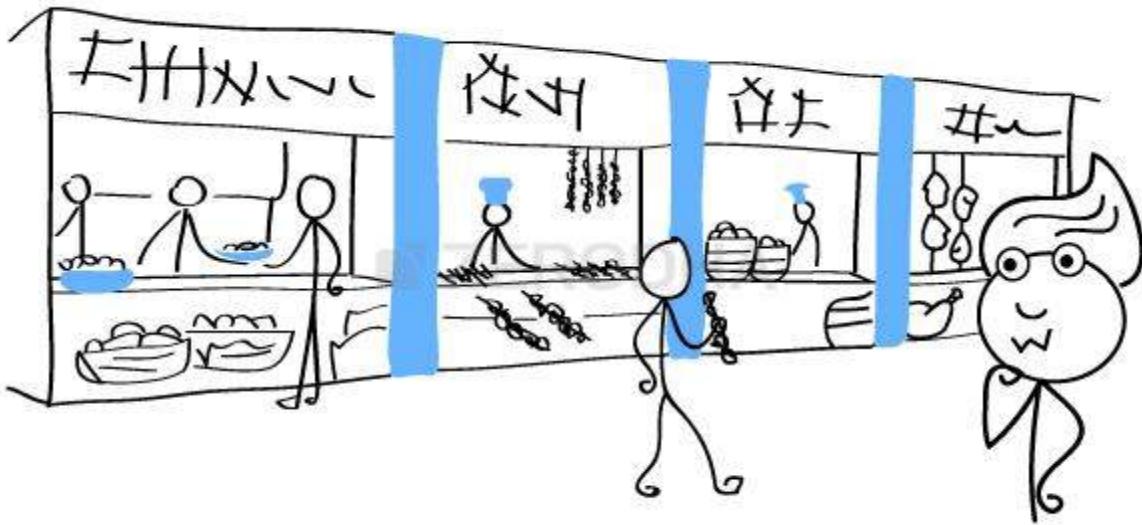
Like all research techniques, Technical Analysis also comes with its own attributes, some of which can be highly complex. However technology makes it easy to understand. We will discover these attributes as we proceed along this module.

## **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 to 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.
- 

### 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 understanding 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.

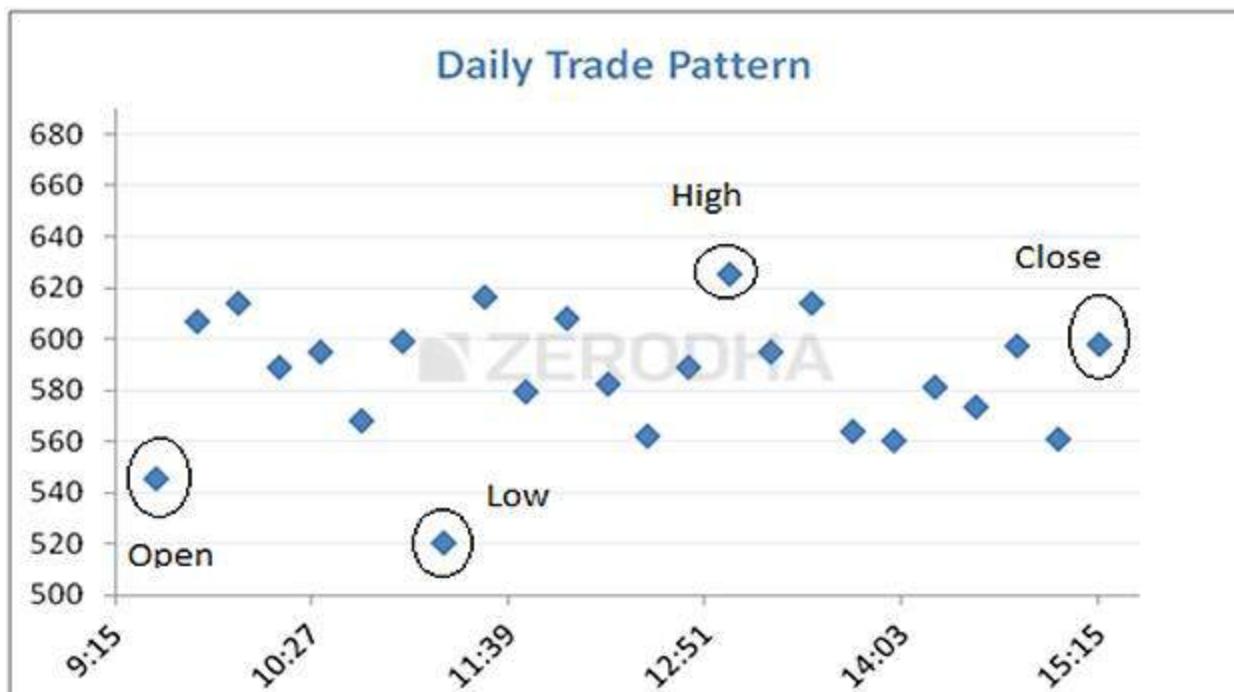
**The Low** – This represents the lowest level at which the market participants were willing to transact for the given day.

**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.

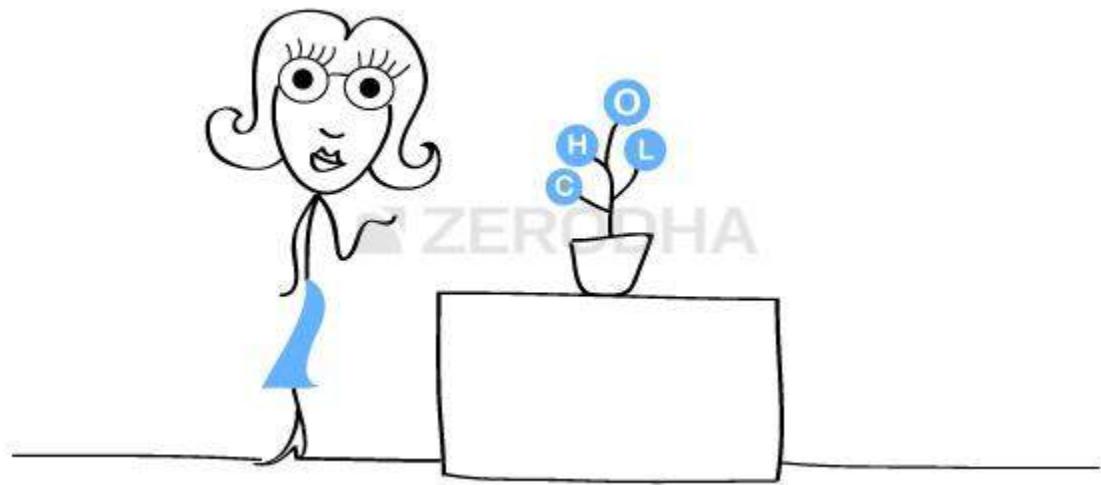
The open, high, low, close prices are the main data points from the technical analysis perspective. Each of these prices have to be plotted on the chart and analyzed.



### 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 ( $\text{close} > \text{open}$ ), 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

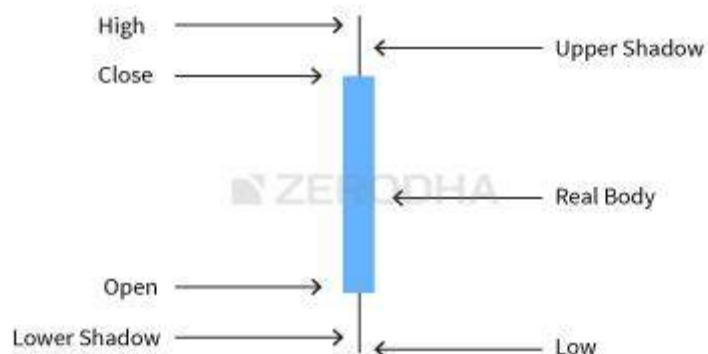
While in a bar chart the open and the close prices are shown by a tick on the left and the right sides of the bar respectively, however in a candlestick the open and close prices are displayed by a rectangular body.

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:



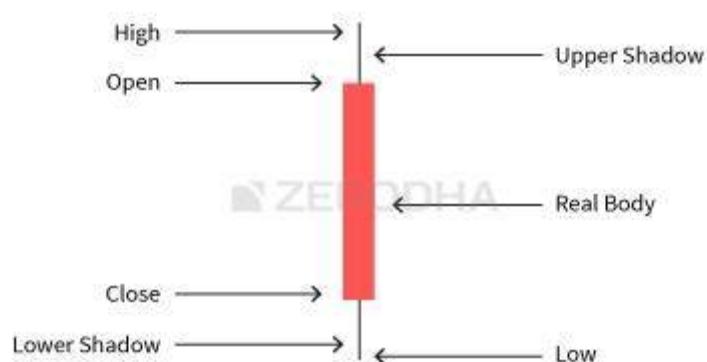
This is best understood with an example. Let us assume the prices as follows..

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.

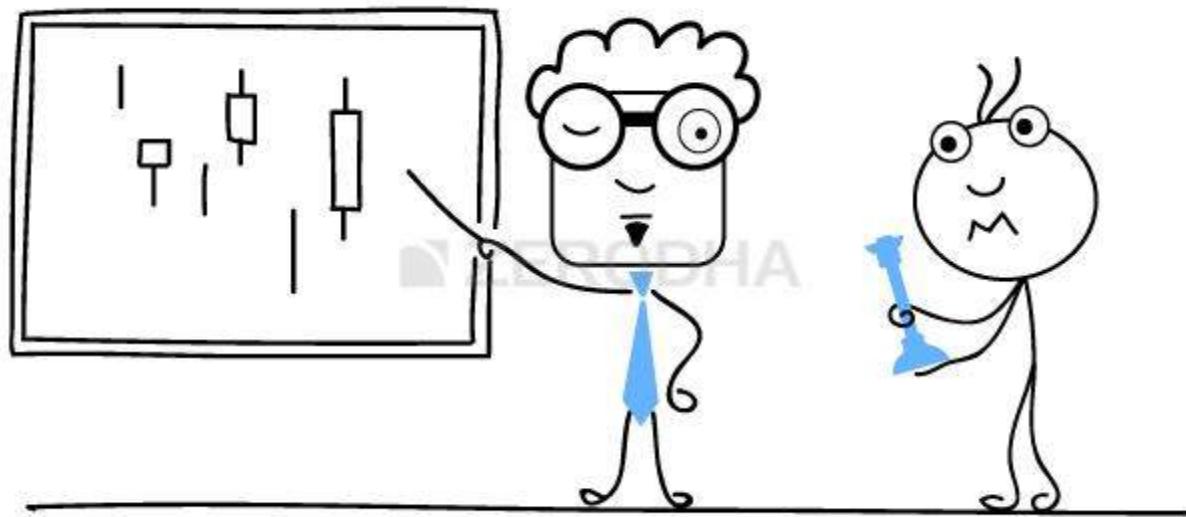
So based on your stance as a trader you need to choose a time frame. This is extremely crucial for your trading success, because a successful trader looks for information and discards the noise.

### 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  $\text{close} > \text{open}$  = It is a Bullish candle. When  $\text{close} < \text{open}$  = 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.

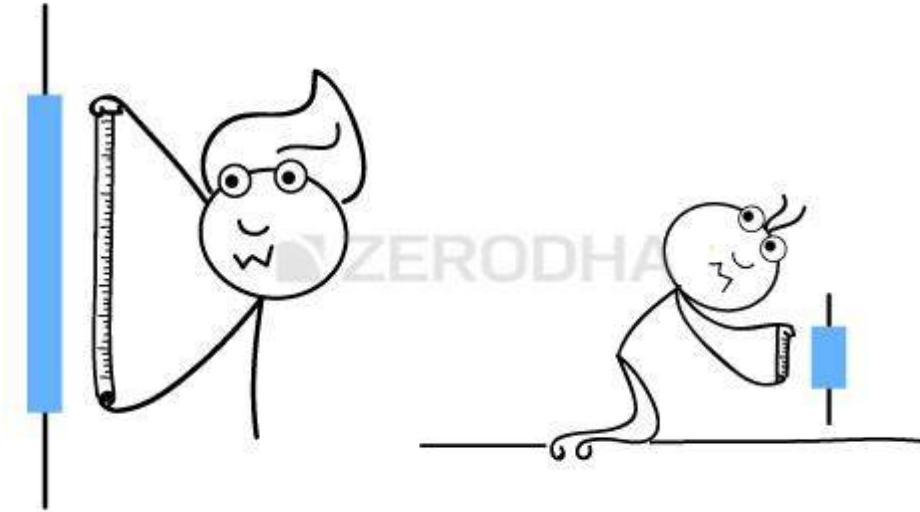
---

### 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)

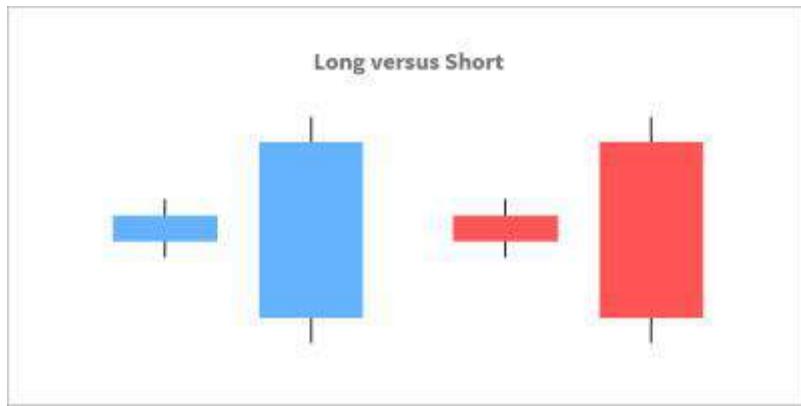


### 5.1 – Overview

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

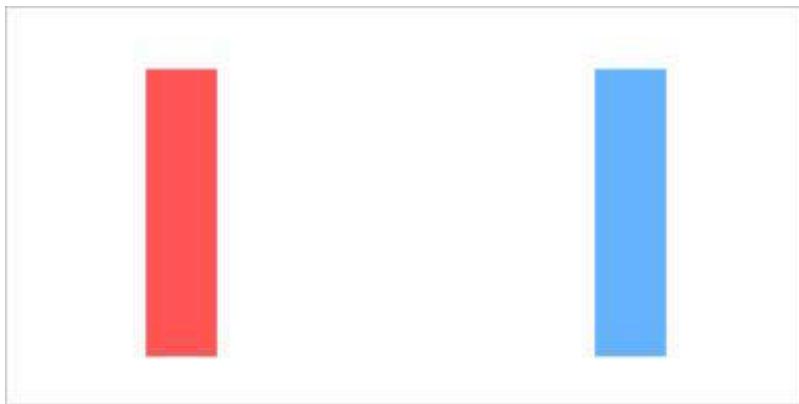
The Marubozu is the first single candlestick pattern that we will understand. The word Marubozu means “Bald” in Japanese. We will understand the context of the terminology soon. There are two types of marubozu – the bullish marubozu and the bearish marubozu.

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:

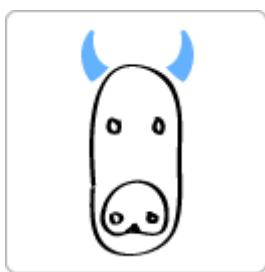
1. Buy strength and sell weakness
2. Be flexible with patterns (verify and quantify)
3. Look for prior trend

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.

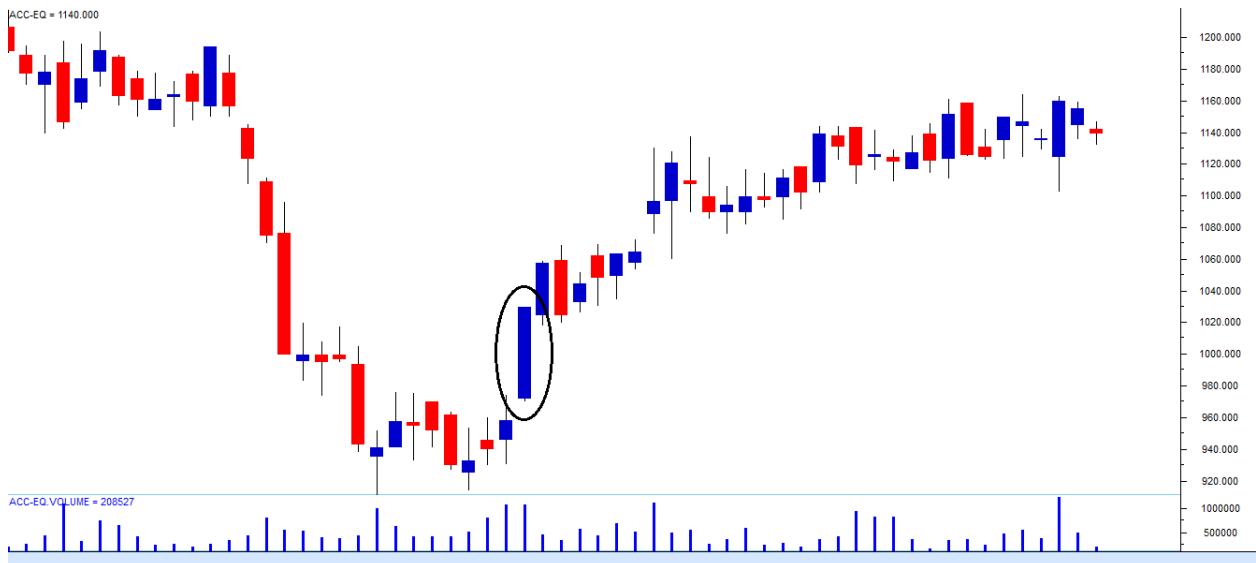


### 5.3 – Bullish Marubuzo

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 marubozu 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 come with an 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 market 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 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 marubuzo
  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 marubuzo
  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.

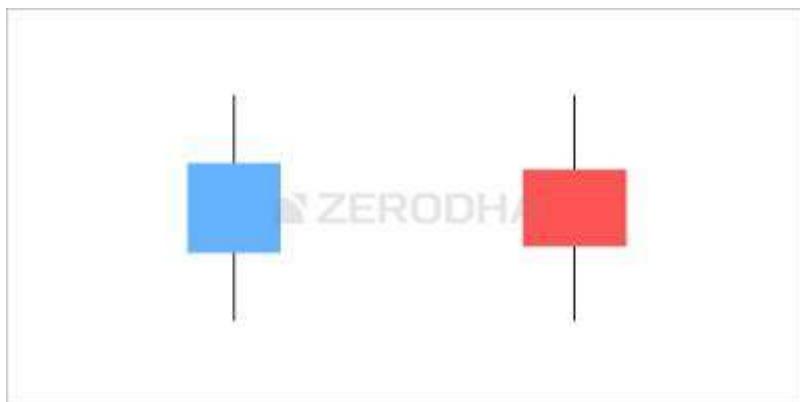
## Single Candlestick patterns (Part 2)



### 6.1 – The Spinning Top

The spinning top is a very interesting candlestick. Unlike the Marubozo, 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.

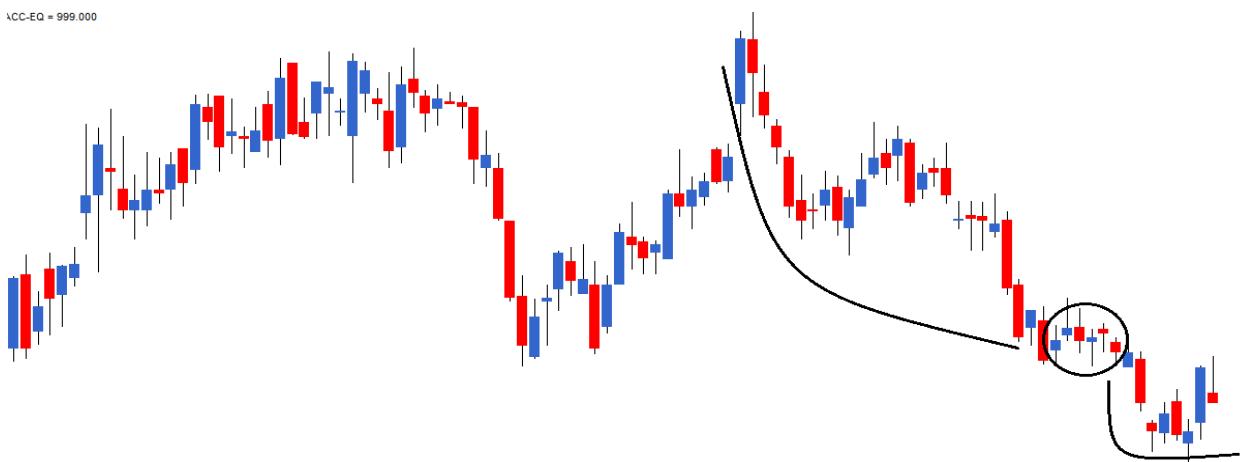
If the trader has been waiting for an opportunity to go long on the stock, probably this could be his opportunity to do so. However to play safe he could test the waters with only half the quantity. If the trader wants to buy 500 shares, he could probably enter the trade with 250 shares and could wait 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 formed 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.

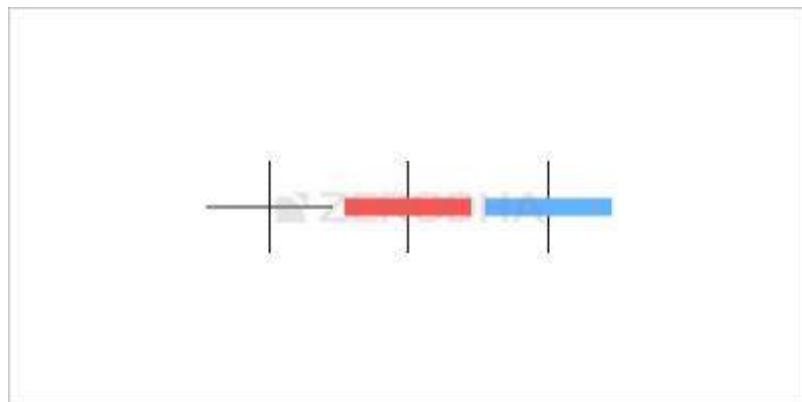


To sum up, the spinning top candle shows confusion and indecision in the market with an equal probability of reversal or continuation. Until the situation becomes clear the traders should be cautious and they should minimize their position size.



### 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.



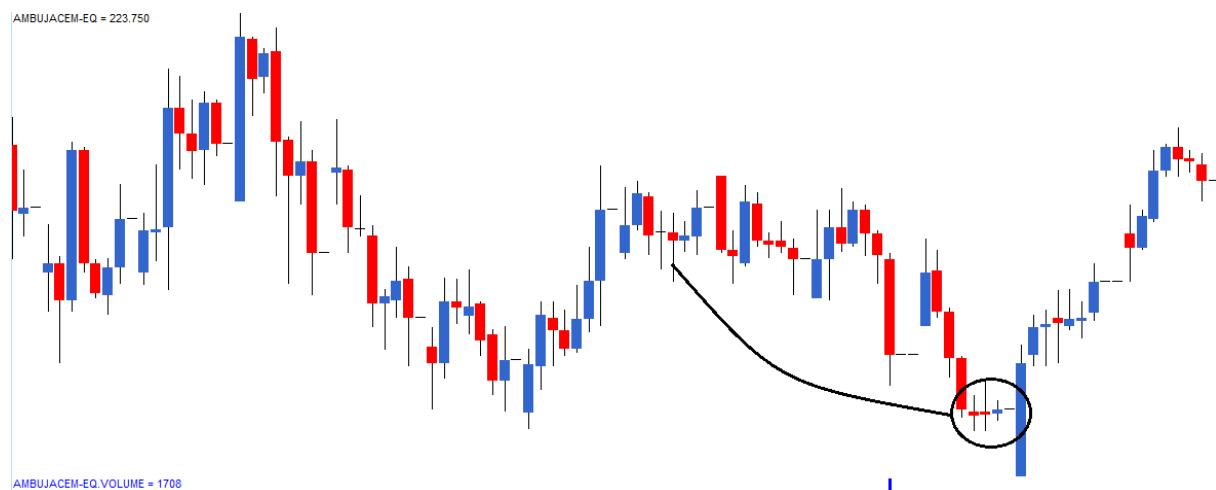
The classic definition of a doji suggests that the open price should be equal to the close price with virtually a non existant real body. The upper and lower wicks can be of any length.

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.

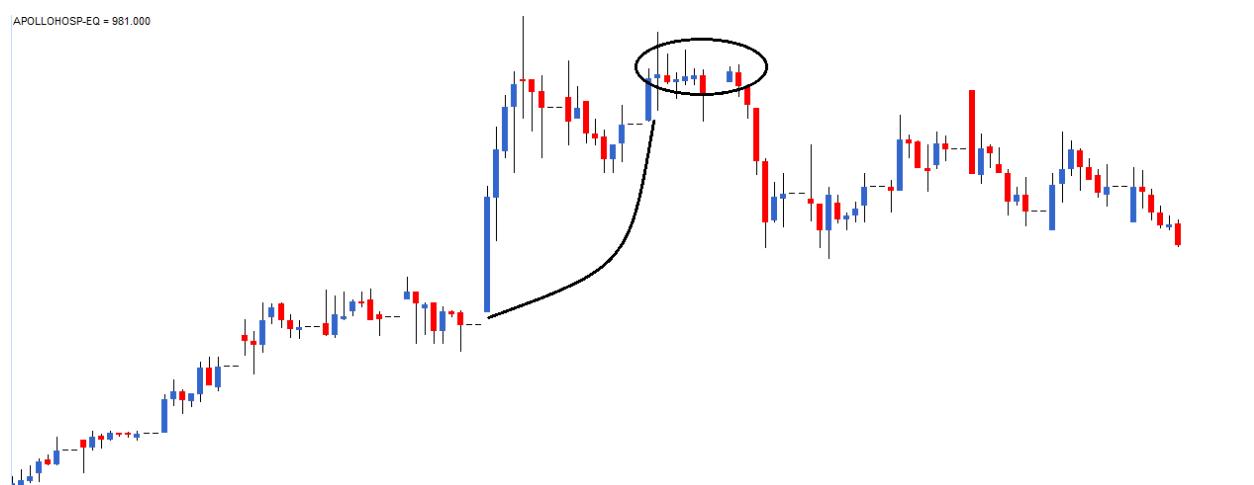
Obviously the color of the candle does not matter in case of a wafer thin real body. What matters is the fact that the open and close prices were very close to each other.

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.

---

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

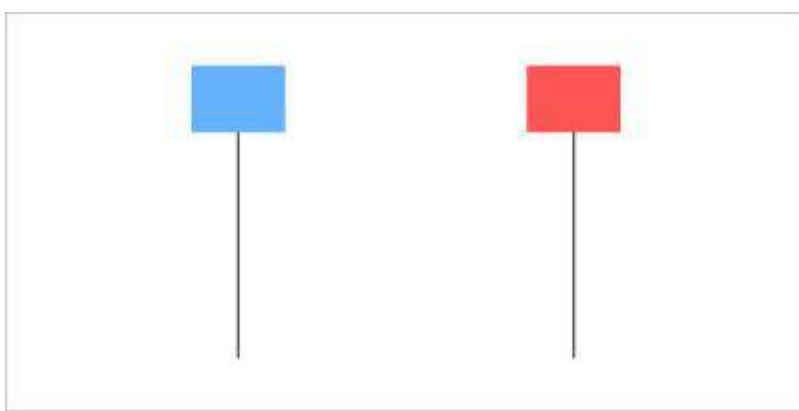
1. A spinning top has a small real body. The upper and lower shadows are almost equal in length
2. The colour of the spinning top does not matter. What matters is the fact that the open and close prices are very close to each other
3. Spinning tops conveys indecision in the market with both bulls and 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 traders 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.



The trade set up would be as follows:

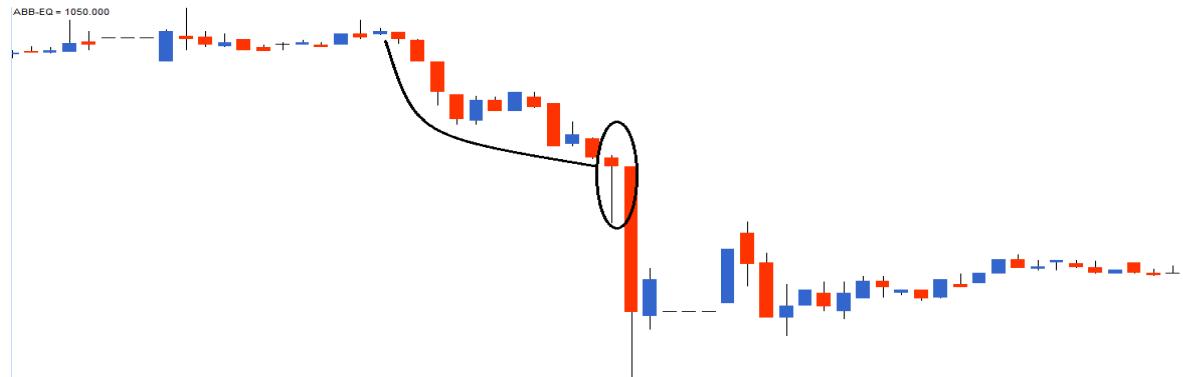
Buy Price for a risk taker – He takes the trade on the Hammer candle itself at – Rs.444/-

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/-

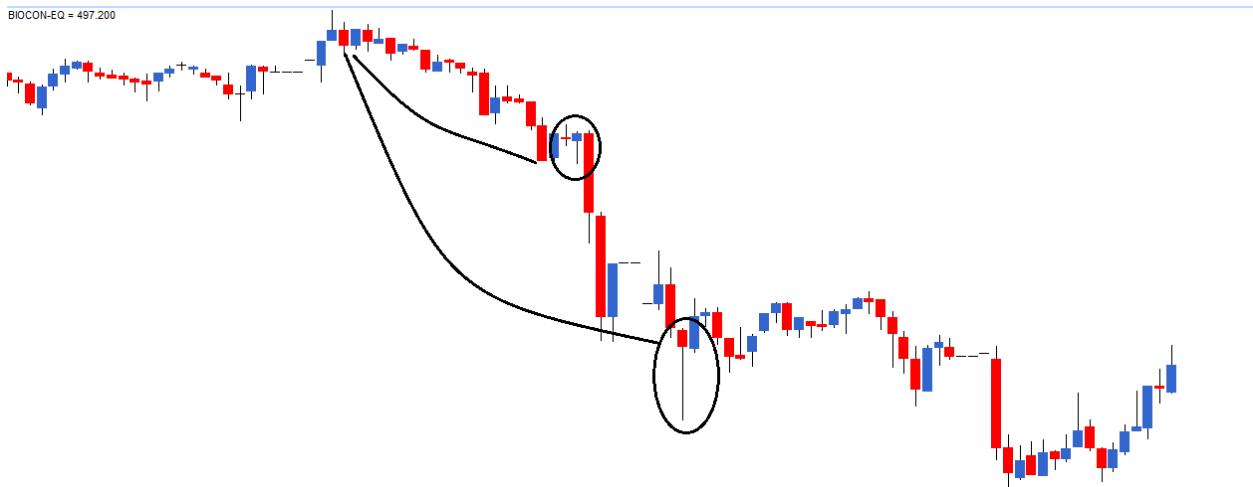
Stoploss for both the traders is at Rs.441.5/-, which is the low of the hammer formation.

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.



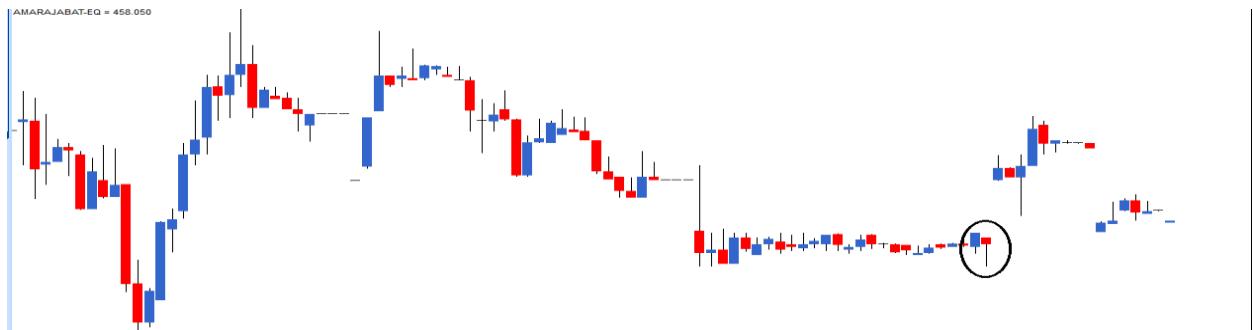
Both the hammers qualified on the pre conditions of a hammer i.e :

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.



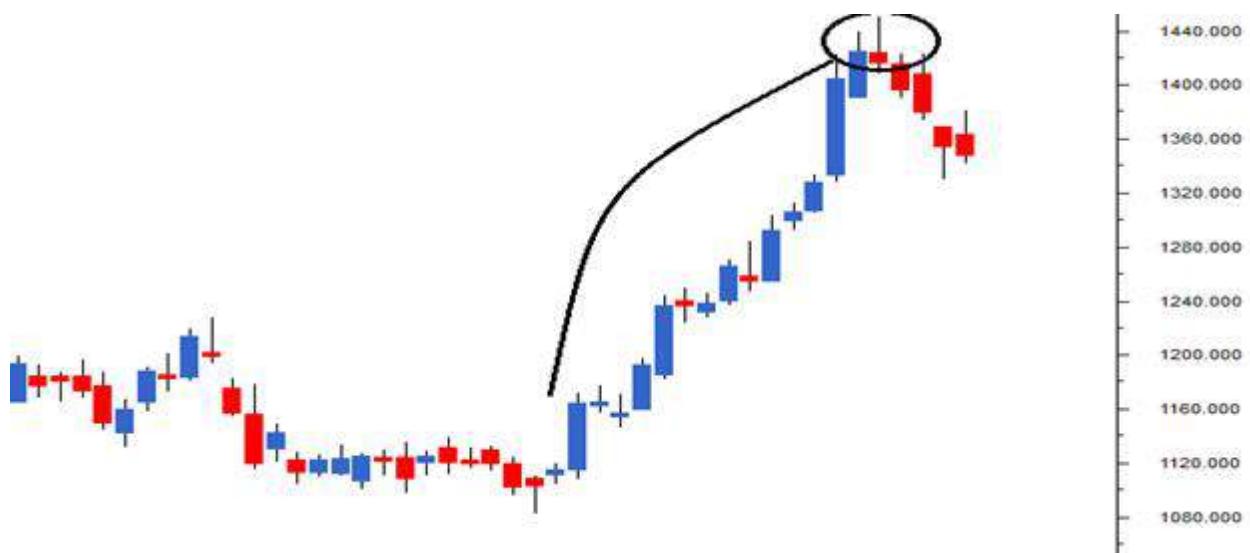
Unlike a paper umbrella, the shooting star does not have a long lower shadow. Instead it has a long upper shadow where the length of the shadow is at least twice the length of the real body. The colour of the body does not matter, but the pattern is slightly more reliable if the real body is red. The 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



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

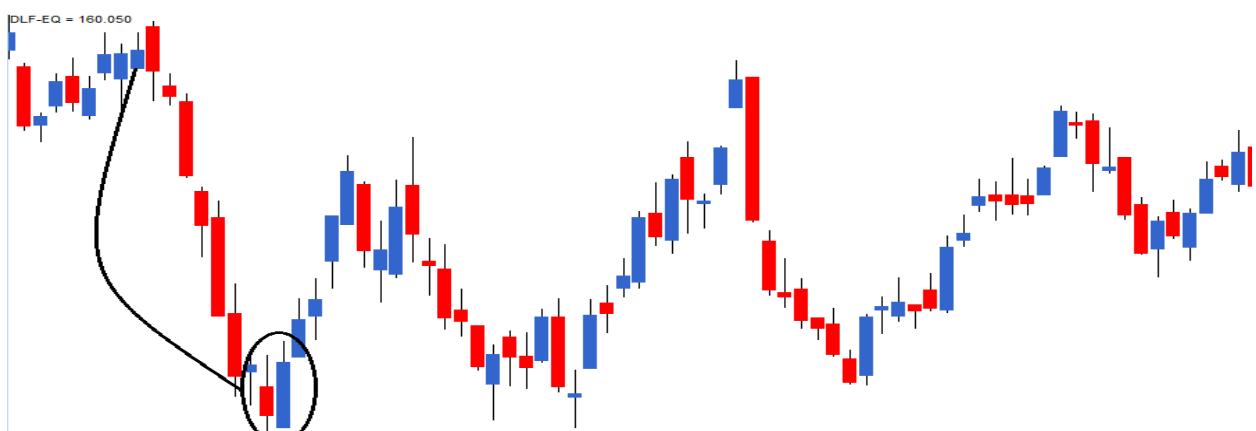
The trade set up for the bullish engulfing pattern is as follows:

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
  - o Risk taker initiates the trade on P2 itself after ensuring P2 is engulfing P1
  - o 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
  - o The open on P2 is higher than P1's close
  - o 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**

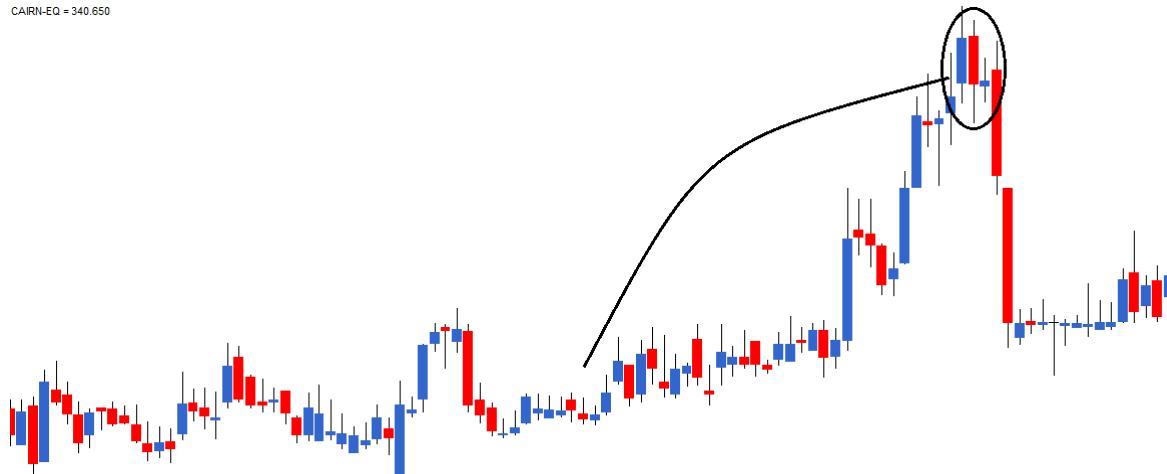
Now here is a very interesting chart. From my own personal experience I can tell you, charts like the one shown below are highly profitable. One should not miss such trading opportunities

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?



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:

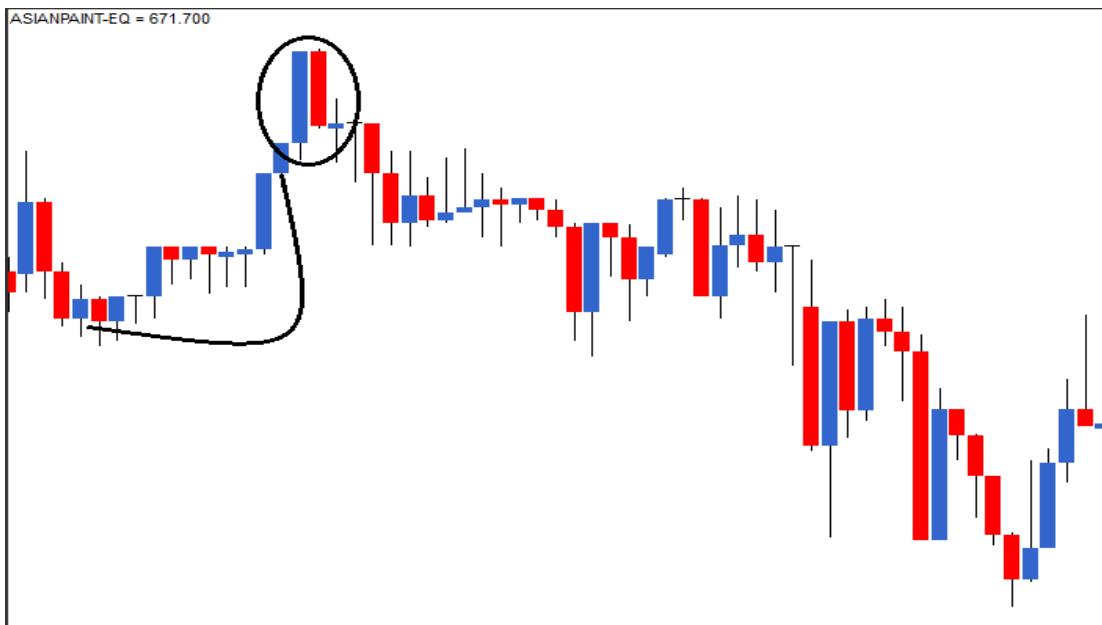


Here P2's blue candle engulfs just under 50% of P1's red candle. For this reason we do not consider this as a piercing pattern.



## 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.

---

### **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:

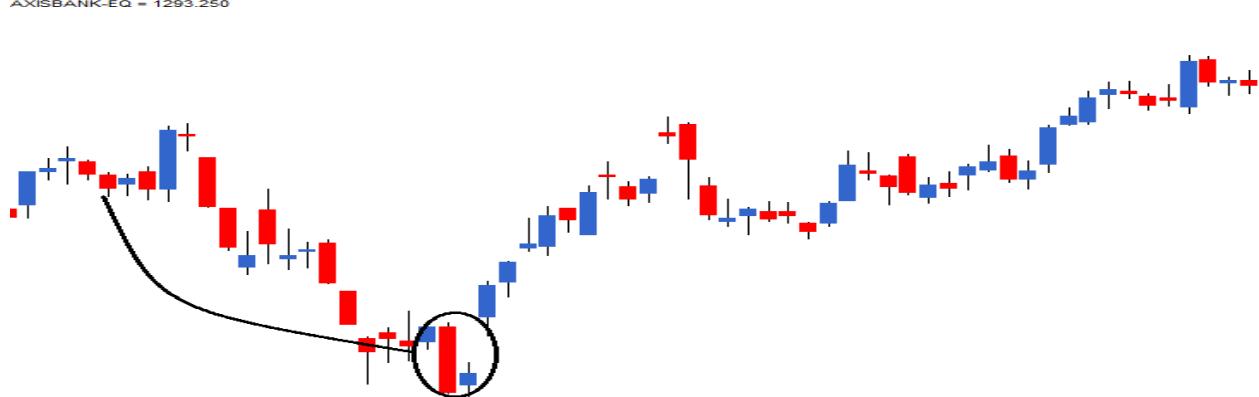
1. The market is in a downtrend pushing the prices lower, therefore giving the bears absolute control over the markets
2. On day 1 of the pattern (P1) a red candle with a new low is formed, reinforcing the bear's position in the market
3. On day 2 of the pattern (P2) the market opens at a price higher 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:



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.

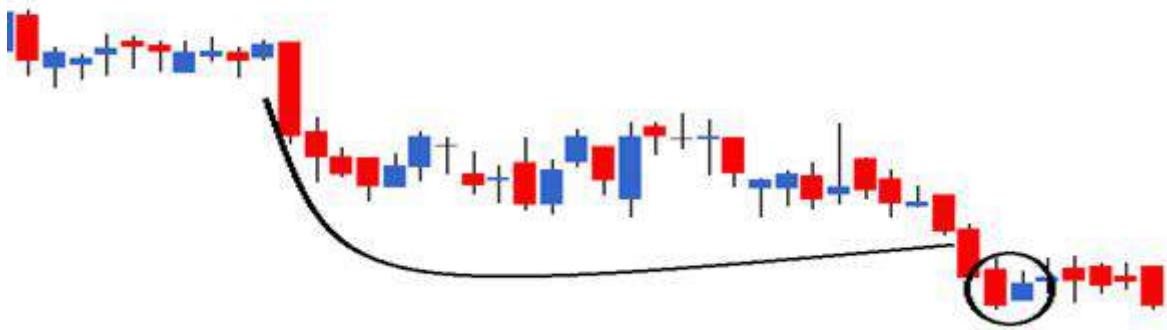
The risk averse will initiate the trade the day near the close of the day after P2, provided it is a blue candle day, which in this case is.

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 an 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.

---

### **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.

---

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

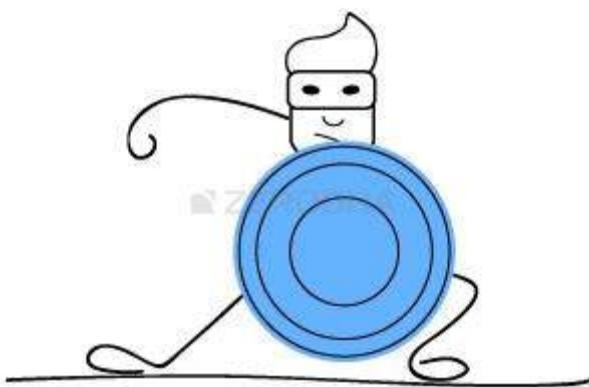
1. Star formation occurs over three trading sessions. The candle of P2 is usually a doji or a spinning top
2. If there is a doji on P2 in a star pattern, it is called a doji star (morning doji star, evening doji star) else it is just called the star pattern (morning star, evening star)
3. Morning star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

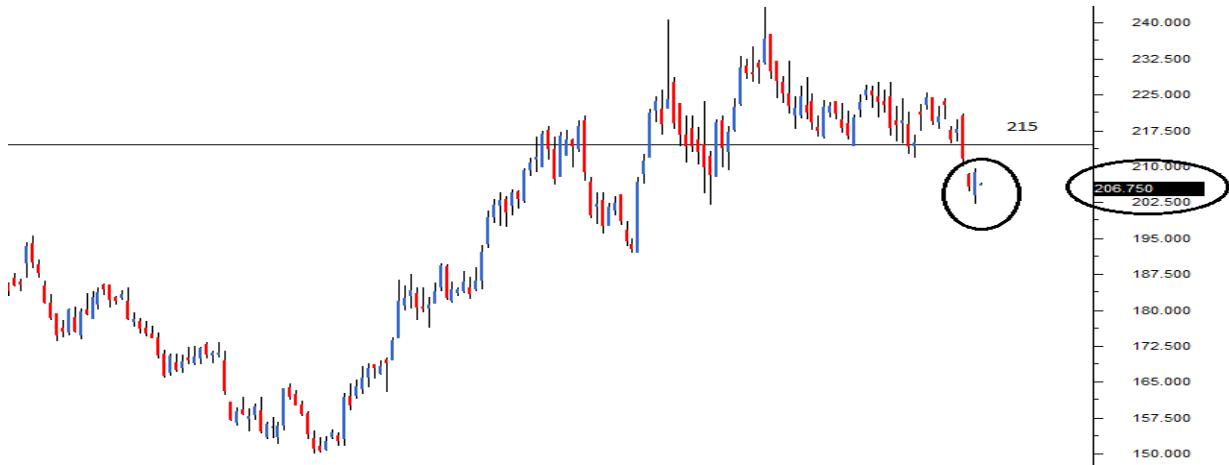


## 11.1 – The Resistance

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

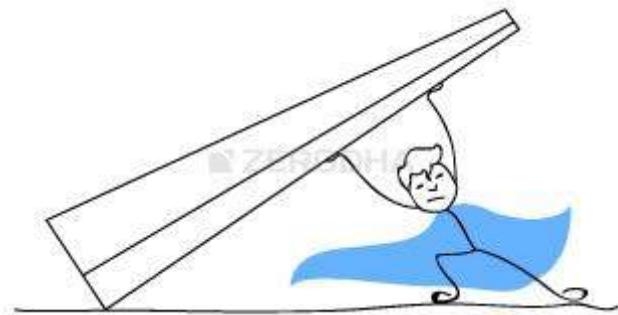
Hence for reasons stated above, when a trader is long he can look at resistance points to set targets and to set exit points for the trade.

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.

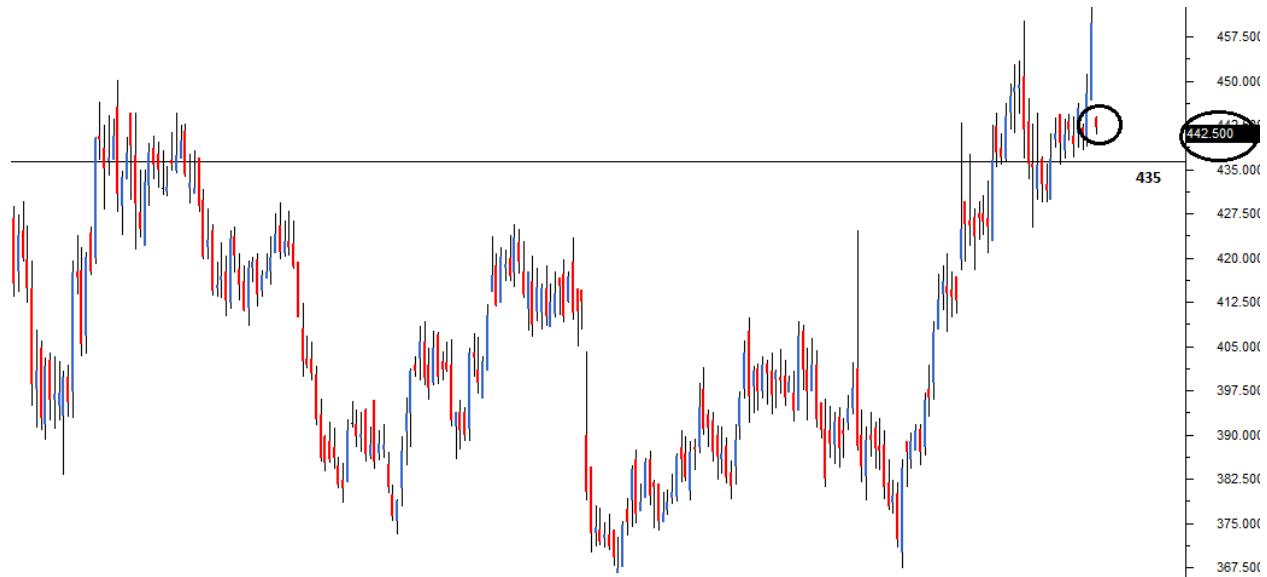


## 11.2 – The Support

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:

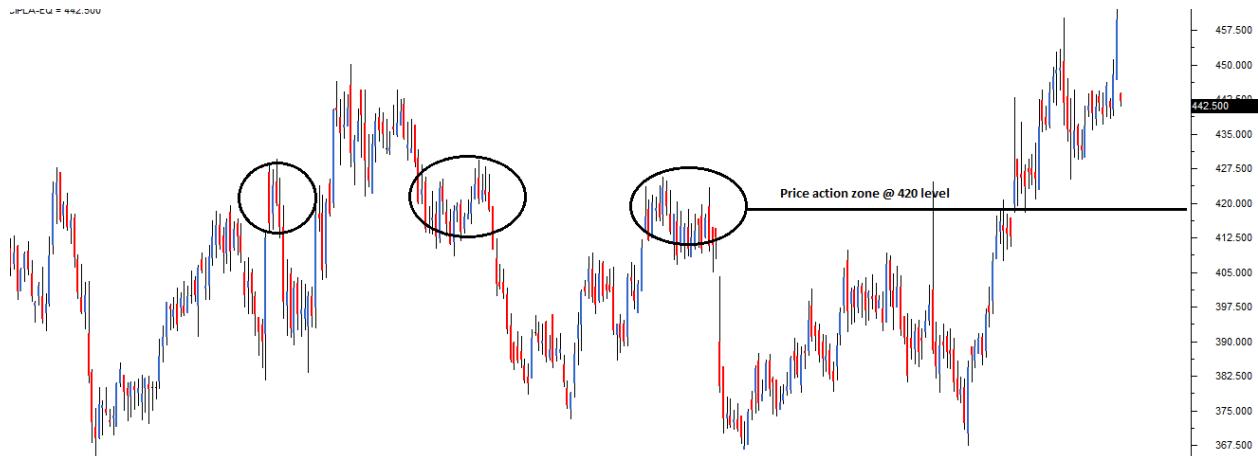


**Step 3) Align the price action zones** – When you look at a 12 month chart, it is common to spot many price action zones. But the trick is to identify at least 3 price action zones that are at the same price level.

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

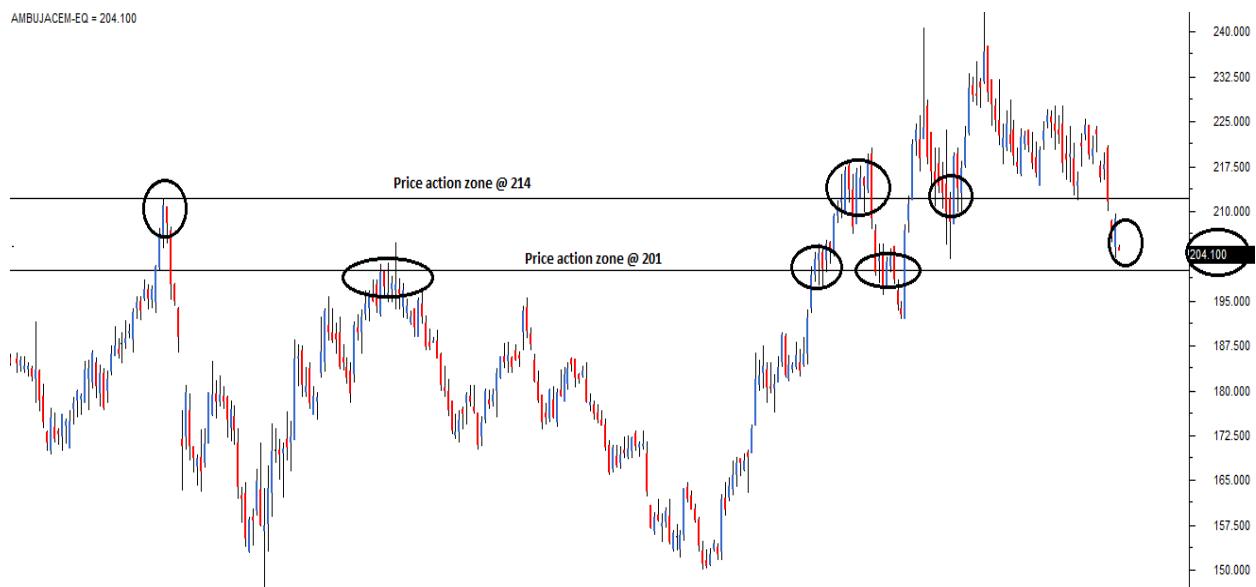
3. The 3<sup>rd</sup> circle highlights a price action zone where there is a sharp reversal of price
4. The 4<sup>th</sup> circle highlights a price action zone where price is sticky
5. The 5<sup>th</sup> circle highlights the current market price of Cipla – 442.5

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 are at least 3 price action zones 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.

---

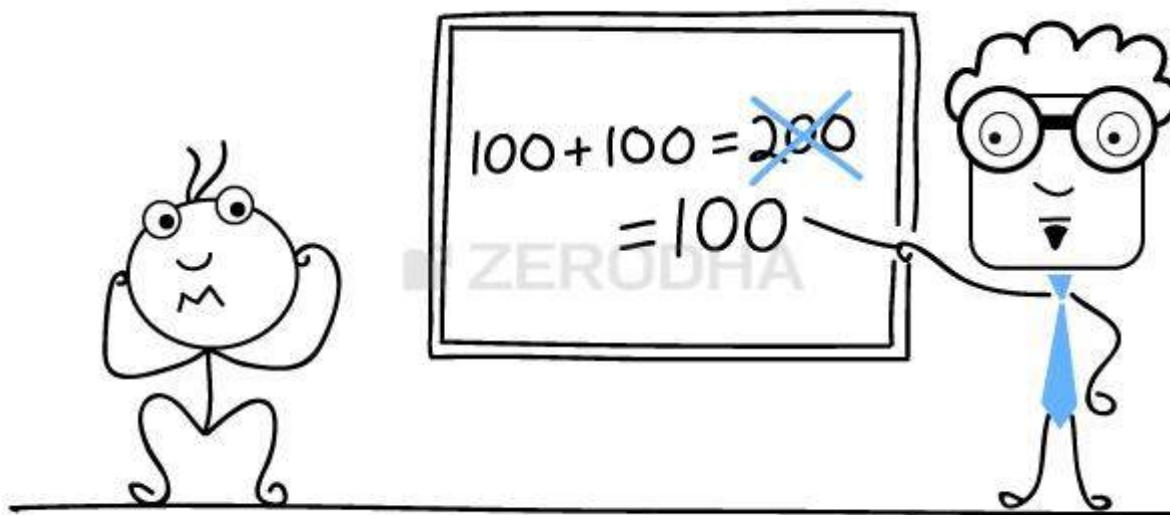
### **Key takeaways from this chapter**

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:

SI 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.



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.

Market Watch News Reader																
Trading sym.	%Change	LTP	Bid qty	Bid rate	Ask rate	Ask qty	Open	High	Low	Prev close	Volume	Open int.	Total bid	Total ask	Predictive Cls ...	Chart
CUMMINSINL	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	
THOMASCOOL	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	355.60	1000	356.00	357.20	348.65	356.00	3189281	0	223708	520007	355.98	
CPLA-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	1060542	0	78516	87850	549.55	

As you can see, the volume for Cummins India Limited has increased from 12,72,736 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:

SI 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 **2<sup>nd</sup>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:

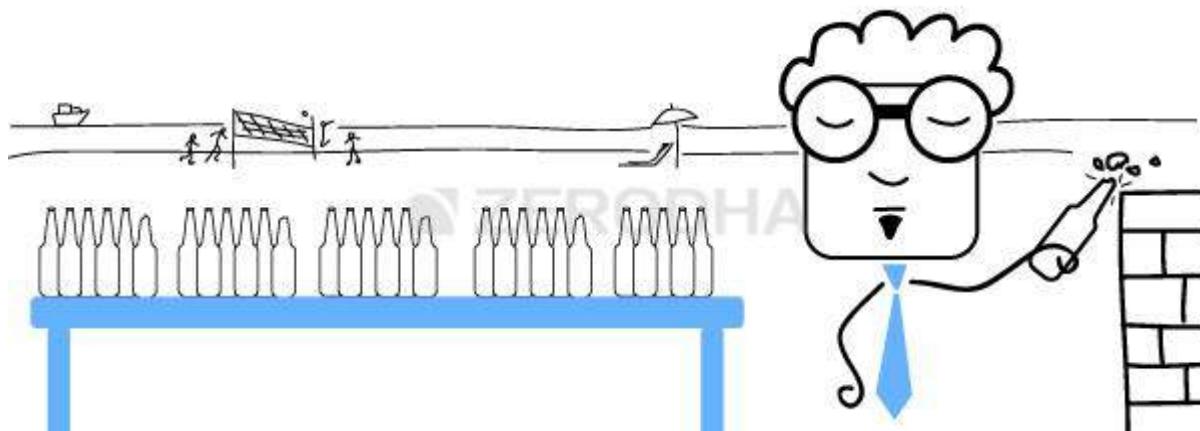
1. The stock should form a recognizable candlestick pattern
  2. S&R should confirm the trade. The stoploss price should be around S&R
    1. For a long trade, the low of the pattern should be around the support
    2. For a short trade, the high of the pattern should be around the resistance
    3. 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

<b>Total</b>	<b>1179.75</b>
--------------	----------------

$$= 1179.75 / 5$$

$$= 343.95$$

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 **latest5 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
<b>Total</b>	<b>1212.3</b>

$$= 1212.3 / 5$$

$$= 242.5$$

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 21st 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.

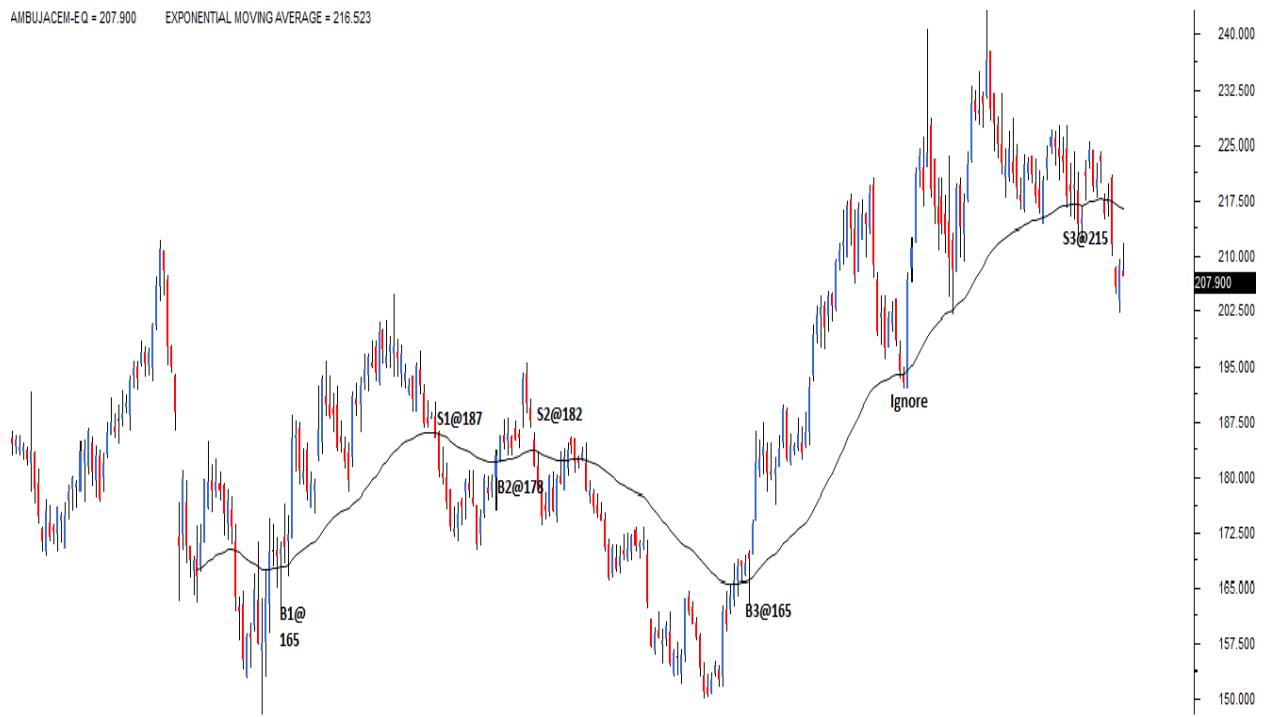
We can develop a simple trading system based on these conclusions. A trading system can be defined as a set of rules that help you identify entry and exit points.

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 sideway 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 its 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.

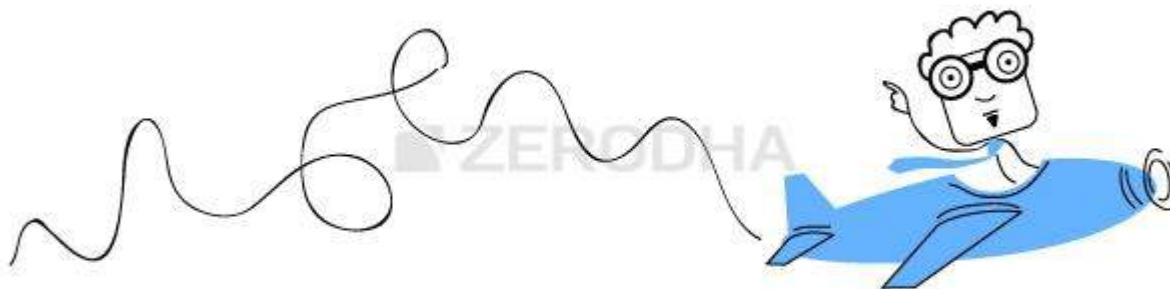
Remember, MA is a trend following system – as long as there is a trend, the moving averages work brilliantly. It does not matter which time frame you use or which cross over combination you use.

### Key takeaways from this chapter

1. A standard average calculation is a quick approximation of a series of numbers
2. In a average calculation where the latest data is included, and the oldest is excluded is called a Moving Average
3. The simple moving average (SMA) gives equal weightage to all data points in the series
4. An exponential moving average (EMA) scales the data according to its newness. Recent data gets the maximum weightage and the oldest gets the least weightage
5. For all practical purposes, use an EMA as opposed to SMA. This is because the EMA gives more weightage to the most recent data points
6. The outlook is bullish when the current market price is greater than the EMA. The outlook turns bearish when the current market price turns lesser than the EMA
7. In a non trending market, moving averages may result in whipsaws thereby causing frequent losses. To overcome this a EMA crossover system is adopted
8. In a typical crossover system, the price chart is 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:

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

$$RS = \text{Average Gain} / \text{Average Loss}$$

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:

SI No	Closing Price	Points Gain	Points Lost
1	99		
2	100	1	
3	101	1	
4	102	1	
5	101	-1	
6	100	-1	
7	99	-1	
8	98	-1	
9	99	1	
10	100	1	
11	101	1	
12	102	1	
13	101	-1	
14	100	-1	
15	99	-1	
16	98	-1	
17	99	1	
18	100	1	
19	101	1	
20	102	1	
21	101	-1	
22	100	-1	
23	99	-1	
24	98	-1	
25	99	1	
26	100	1	
27	101	1	
28	102	1	
29	101	-1	
30	100	-1	
31	99	-1	
32	98	-1	
33	99	1	
34	100	1	
35	101	1	
36	102	1	
37	101	-1	
38	100	-1	
39	99	-1	
40	98	-1	
41	99	1	
42	100	1	
43	101	1	
44	102	1	
45	101	-1	
46	100	-1	
47	99	-1	
48	98	-1	
49	99	1	
50	100	1	
51	101	1	
52	102	1	
53	101	-1	
54	100	-1	
55	99	-1	
56	98	-1	
57	99	1	
58	100	1	
59	101	1	
60	102	1	
61	101	-1	
62	100	-1	
63	99	-1	
64	98	-1	
65	99	1	
66	100	1	
67	101	1	
68	102	1	
69	101	-1	
70	100	-1	
71	99	-1	
72	98	-1	
73	99	1	
74	100	1	
75	101	1	
76	102	1	
77	101	-1	
78	100	-1	
79	99	-1	
80	98	-1	
81	99	1	
82	100	1	
83	101	1	
84	102	1	
85	101	-1	
86	100	-1	
87	99	-1	
88	98	-1	
89	99	1	
90	100	1	
91	101	1	
92	102	1	
93	101	-1	
94	100	-1	
95	99	-1	
96	98	-1	
97	99	1	
98	100	1	
99	101	1	
100	102	1	
101	101	-1	
102	100	-1	
103	99	-1	
104	98	-1	
105	99	1	
106	100	1	
107	101	1	
108	102	1	
109	101	-1	
110	100	-1	
111	99	-1	
112	98	-1	
113	99	1	
114	100	1	
115	101	1	
116	102	1	
117	101	-1	
118	100	-1	
119	99	-1	
120	98	-1	
121	99	1	
122	100	1	
123	101	1	
124	102	1	
125	101	-1	
126	100	-1	
127	99	-1	
128	98	-1	
129	99	1	
130	100	1	
131	101	1	
132	102	1	
133	101	-1	
134	100	-1	
135	99	-1	
136	98	-1	
137	99	1	
138	100	1	
139	101	1	
140	102	1	
141	101	-1	
142	100	-1	
143	99	-1	
144	98	-1	
145	99	1	
146	100	1	
147	101	1	
148	102	1	
149	101	-1	
150	100	-1	
151	99	-1	
152	98	-1	
153	99	1	
154	100	1	
155	101	1	
156	102	1	
157	101	-1	
158	100	-1	
159	99	-1	
160	98	-1	
161	99	1	
162	100	1	
163	101	1	
164	102	1	
165	101	-1	
166	100	-1	
167	99	-1	
168	98	-1	
169	99	1	
170	100	1	
171	101	1	
172	102	1	
173	101	-1	
174	100	-1	
175	99	-1	
176	98	-1	
177	99	1	
178	100	1	
179	101	1	
180	102	1	
181	101	-1	
182	100	-1	
183	99	-1	
184	98	-1	
185	99	1	
186	100	1	
187	101	1	
188	102	1	
189	101	-1	
190	100	-1	
191	99	-1	
192	98	-1	
193	99	1	
194	100	1	
195	101	1	
196	102	1	
197	101	-1	
198	100	-1	
199	99	-1	
200	98	-1	
201	99	1	
202	100	1	
203	101	1	
204	102	1	
205	101	-1	
206	100	-1	
207	99	-1	
208	98	-1	
209	99	1	
210	100	1	
211	101	1	
212	102	1	
213	101	-1	
214	100	-1	
215	99	-1	
216	98	-1	
217	99	1	
218	100	1	
219	101	1	
220	102	1	
221	101	-1	
222	100	-1	
223	99	-1	
224	98	-1	
225	99	1	
226	100	1	
227	101	1	
228	102	1	
229	101	-1	
230	100	-1	
231	99	-1	
232	98	-1	
233	99	1	
234	100	1	
235	101	1	
236	102	1	
237	101	-1	
238	100	-1	
239	99	-1	
240	98	-1	
241	99	1	
242	100	1	
243	101	1	
244	102	1	
245	101	-1	
246	100	-1	
247	99	-1	
248	98	-1	
249	99	1	
250	100	1	
251	101	1	
252	102	1	
253	101	-1	
254	100	-1	
255	99	-1	
256	98	-1	
257	99	1	
258	100	1	
259	101	1	
260	102	1	
261	101	-1	
262	100	-1	
263	99	-1	
264	98	-1	
265	99	1	
266	100	1	
267	101	1	
268	102	1	
269	101	-1	
270	100	-1	
271	99	-1	
272	98	-1	
273	99	1	
274	100	1	
275	101	1	
276	102	1	
277	101	-1	
278	100	-1	
279	99	-1	
280	98	-1	
281	99	1	
282	100	1	
283	101	1	
284	102	1	
285	101	-1	
286	100	-1	
287	99	-1	
288	98	-1	
289	99	1	
290	100	1	
291	101	1	
292	102	1	
293	101	-1	
294	100	-1	
295	99	-1	
296	98	-1	
297	99	1	
298	100	1	
299	101	1	
300	102	1	
301	101	-1	
302	100	-1	
303	99	-1	
304	98	-1	
305	99	1	
306	100	1	
307	101	1	
308	102	1	
309	101	-1	
310	100	-1	
311	99	-1	
312	98	-1	
313	99	1	
314	100	1	
315	101	1	
316	102	1	
317	101	-1	
318	100	-1	
319	99	-1	
320	98	-1	
321	99	1	
322	100	1	
323	101	1	
324	102	1	
325	101	-1	
326	100	-1	
327	99	-1	
328	98	-1	
329	99	1	
330	100	1	
331	101	1	
332	102	1	
333	101	-1	
334	100	-1	
335	99	-1	
336	98	-1	
337	99	1	
338	100	1	
339	101	1	
340	102	1	
341	101	-1	
342	100	-1	
343	99	-1	
344	98	-1	

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 loses 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.

$$\text{Average Points Gained} = 29/14$$

$$= 2.07$$

$$\text{Average Points Lost} = 10/14$$

$$= 0.714$$

$$\text{RS} = 2.07/0.714$$

$$= 2.8991$$

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.

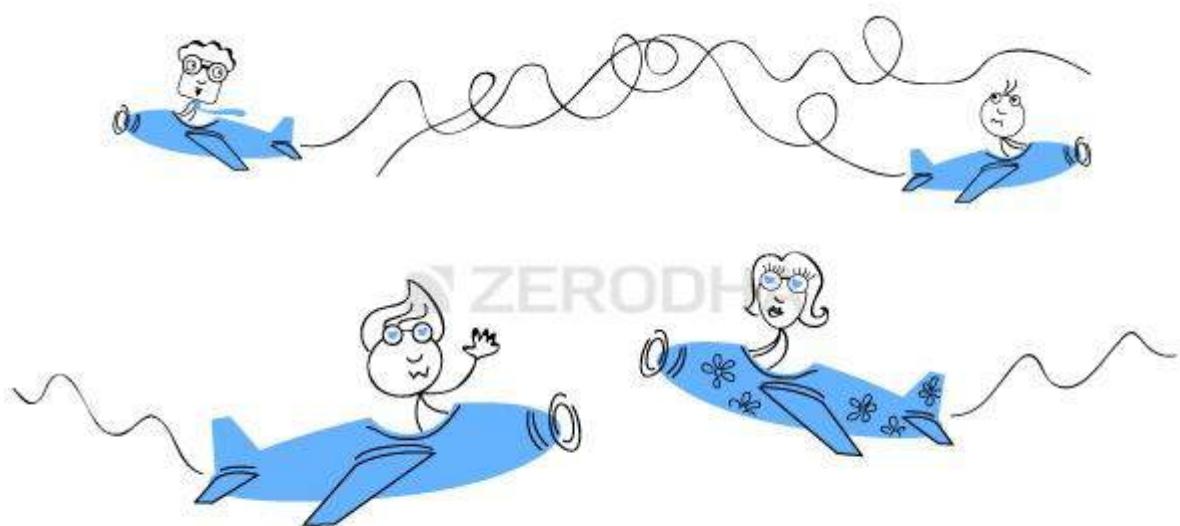
Finally, do remember RSI is not used often as a standalone indicator by traders, it is used along with other candlestick patterns and indicators to study the market.

---

### **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. MACD value = [12 day EMA – 26 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, lets try and find the answer for 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 ?

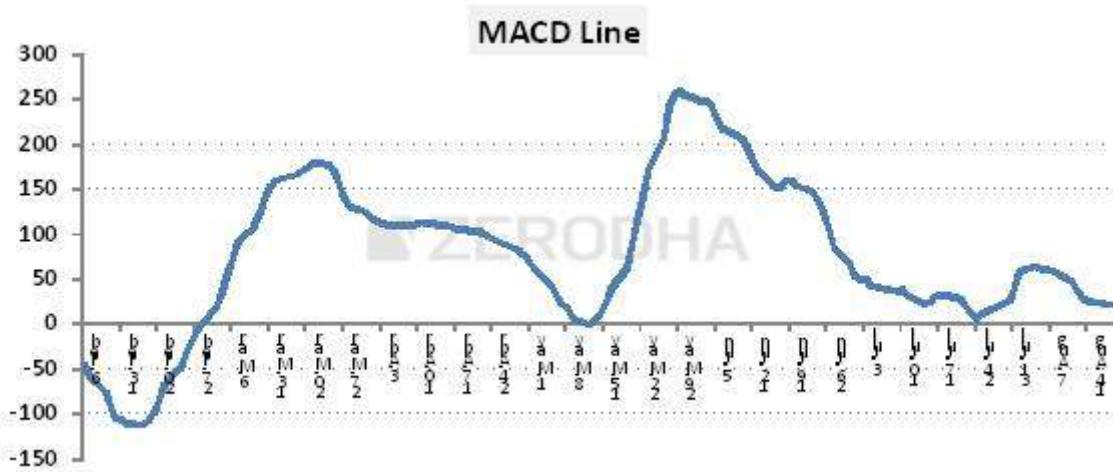
The sign associated with the MACD just indicates the direction of the stock's move. For example if the 12 Day EMA is 6380, and 26 Day EMA is 6220 then the MACD value is +160. Now, under what circumstance do you think the 12 day EMA will be greater than the 26 day EMA? Well, we had looked into this in 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 indicate a positive trend which is stronger than +120.

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

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

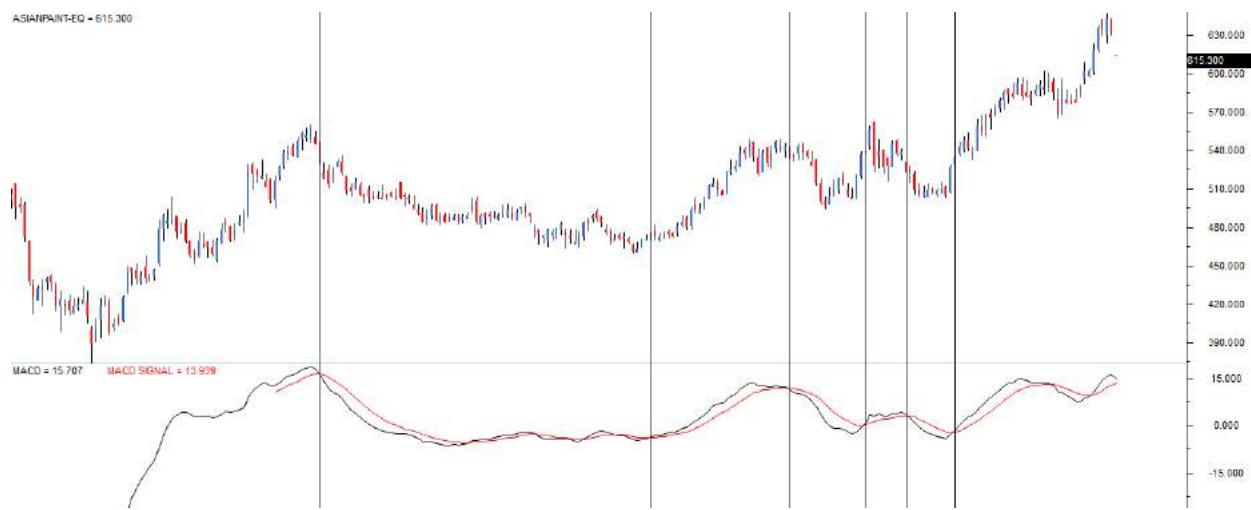
Traders generally argue that while waiting for the MACD line to crossover the center line a bulk of the move would already be done and perhaps it would be late to enter a trade. To overcome this, there is an improvisation over this basic MACD line. The improvisation comes in the form of an additional 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) lies 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.  $7800 - (75 \times 2) = 7650$ .

We now have the components of the BB:

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

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

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

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

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

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

The following is the chart of BPCL Limited,



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

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

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

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

### 15.3 – Other Indicators

There are numerous other technical indicators, and the list is endless. The question is, should you know all these indicators to be a successful trader? The answer is a

simple no. Technical indicators are good to know, but they by no means should be your main tool of analysis.

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

#### 15.4 – The Checklist

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

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

1. The stock should form a recognizable candlestick pattern
2. S&R should confirm to the trade. The stoploss price should be around S&R
  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.

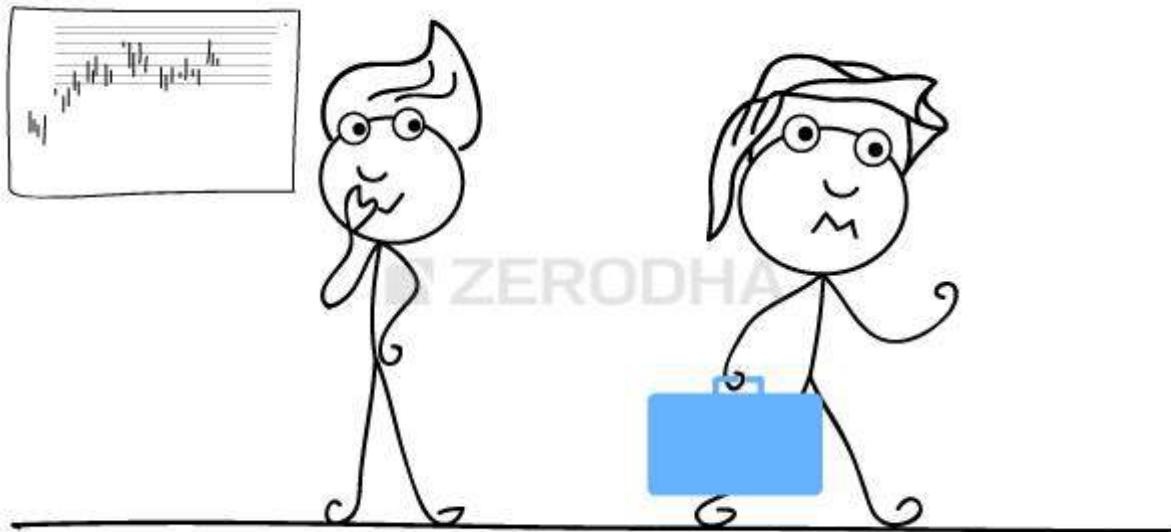
---

## Key takeaways from this chapter

1. A MACD is a trend following system
2. MACD consists of a 12 Day, 26 day EMA
3. MACD line is 12d EMA – 26d EMA
4. Signal line is the 9 day SMA of the MACD line
5. A crossover strategy can be applied between MACD Line, and the signal line
6. The Bollinger band captures the volatility. It has a 20 day average, a +2 SD, and a -2 SD
7. One can short when the current price is at +2SD with an expectation that the price reverts to the average
8. One can go long when the current price is at -2SD with an expectation that the price reverts to the average
9. BB works well in a sideways market. In a trending market the BB's envelope expands, and generates many false signals

10. Indicators are good to know, but it should not be treated as the single source for decision making.

## The Fibonacci Retracements



The topic on Fibonacci retracements is quite intriguing. To fully understand and appreciate the concept of Fibonacci retracements, one must understand the Fibonacci series. The origins of the Fibonacci series can be traced back to the ancient Indian mathematic scripts, with some claims dating back to 200 BC. However, in the 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 is 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 =  $61.8\% * 109 = 67.36$

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:

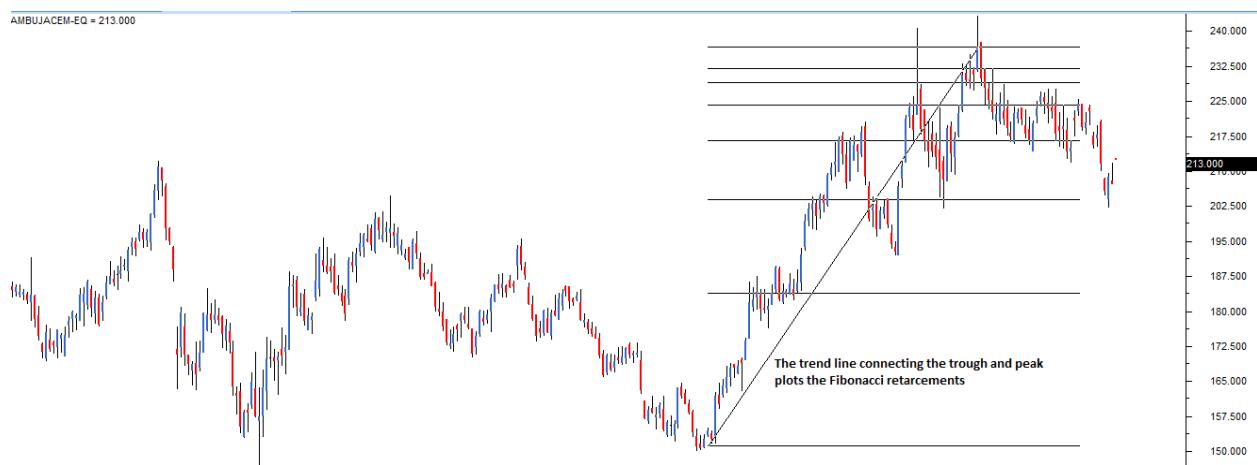
Step 1) Identify the immediate peak and trough. In this case the trough is at 150 and peak is at 240. The 90 point moves make it 100%.



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 retracement levels starts getting plotted on the chart. However, the software completes the retracement identification process only after you finish selecting both the trough and the peak. This is how the chart looks after selecting both the points.



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

### **16.3 – How should you use the Fibonacci retracement levels?**

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

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

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

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

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

---

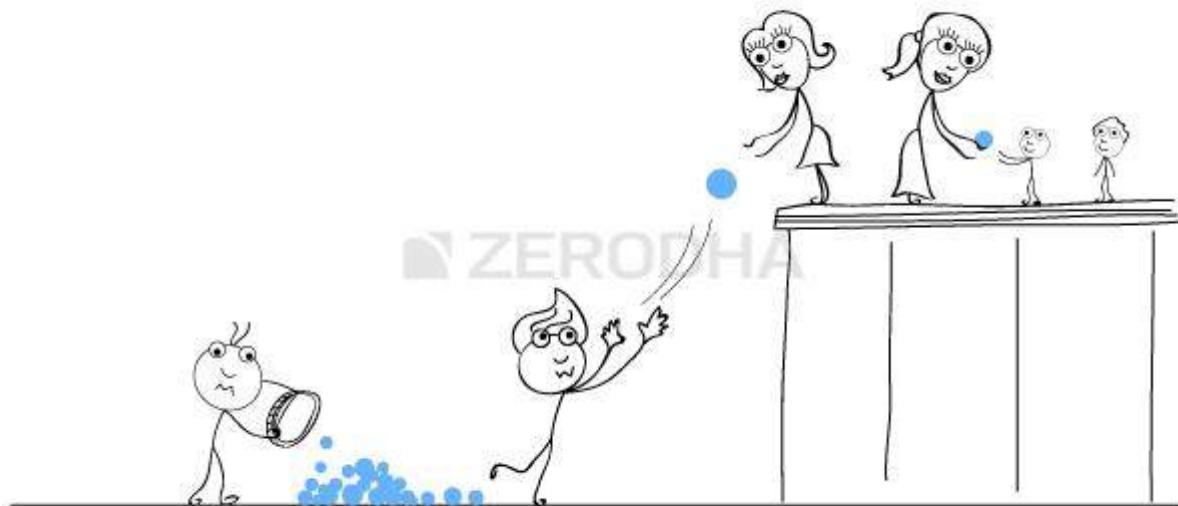
### **Key takeaways from this chapter**

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

## The Dow Theory (Part 1)

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

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



### 17.1 – The Dow Theory Principles

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

Sl No	Tenet	What does it mean?
1		
2		
3		
4		
5		
6		
7		
8		
9		

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) there by giving them the well needed price support. The distribution phase has similar price properties as that of the accumulation phase. In the distribution phase, whenever the prices attempt to go higher, the smart money off loads their holdings. Over a period of time this action repeats several times and thus the resistance level is created.

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

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

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

### 17.3 – The Dow Patterns

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

1. The Double bottom & Double top formation
2. The Triple Bottom & Triple Top
3. Range formation, and
4. Flag formation

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

### 17.4 – The Double bottom and top formation

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

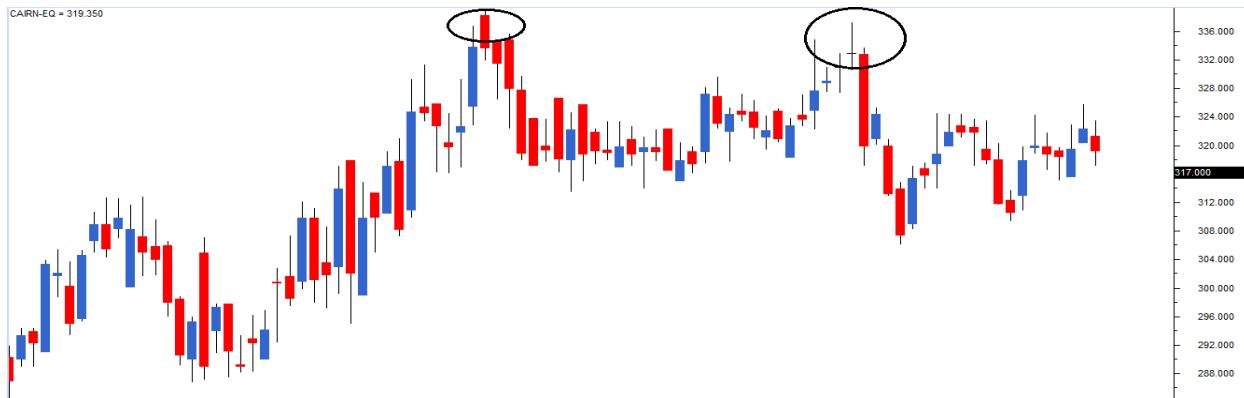
A double bottom formation is considered bullish, and hence one should look at buying opportunities. Here is a chart that shows a double bottom formation in Cipla Limited:



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

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

top was around Rs.336, and the second top was around Rs.332. With some amount of flexibility a small difference such as this should be considered alright.



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

For instance, imagine a situation where in the double top formation, the 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.



---

## **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

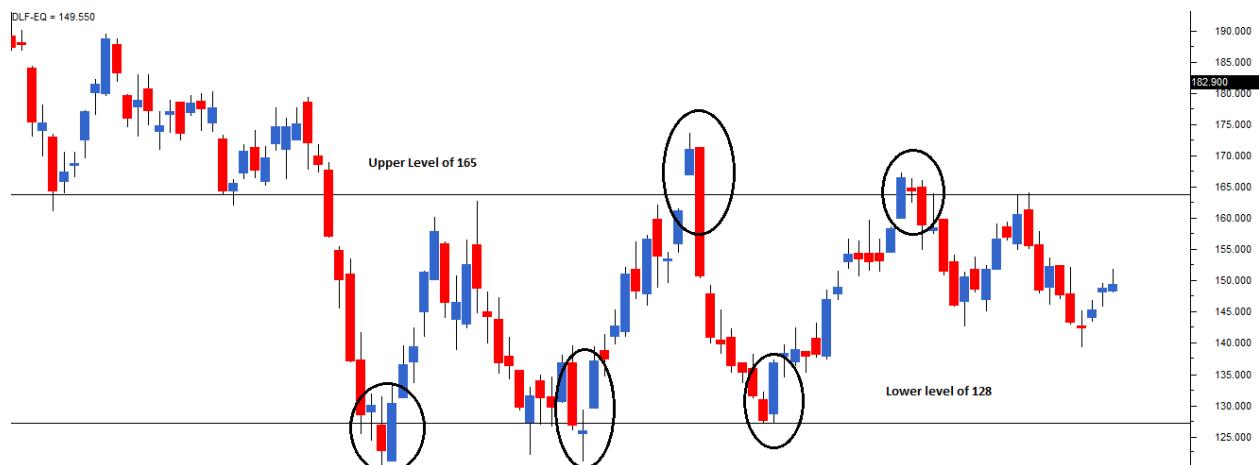
## The Dow Theory (Part 2)

### 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:

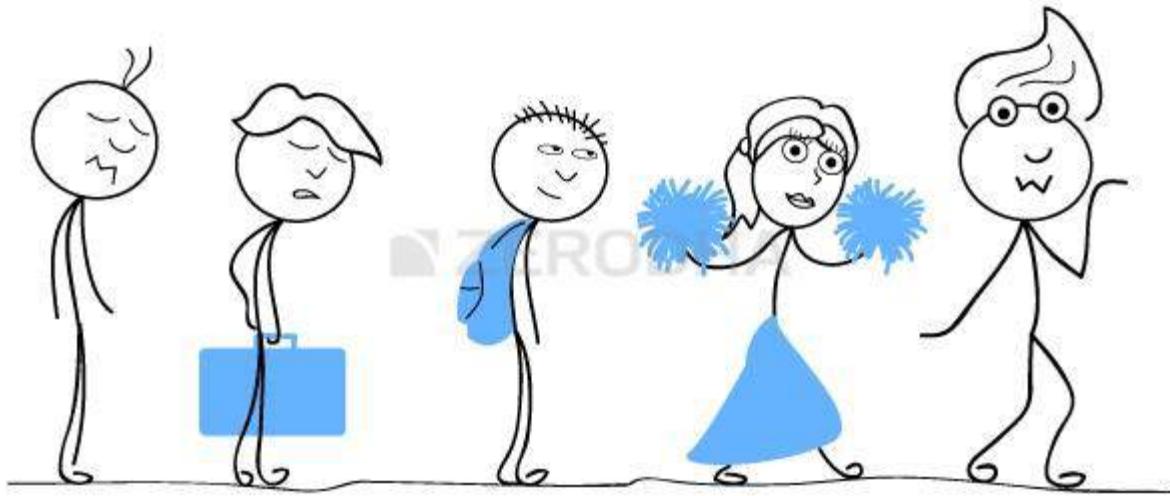


As you can see the stock hit the same upper (Rs.165) and the same lower (Rs.128) level multiple times, and continued to trade within the range. The area between the upper and lower level is called the width of the range. One of the easy trades to initiate in such a scenario would be to buy near the lower 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  $168 + 43 = 211$ .

### **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 a worth the risk.

For example consider this long trade:

Entry: 107

Stop loss: 102

Expected target: 114

In this trade the trader is risking Rs.5/- ( $107 - 102$ ) for an expected reward of Rs.7/- ( $114 - 107$ ). RRR in this case is  $7/5 = 1.4$ . 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:  $7.17/7.18 = \sim 1.0$

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

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

## 18.6 – The Grand Checklist

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

1. The stock should form a 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.

---

### 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 identify a process, employing which we can scan for trading opportunities. The process is mainly suited for a swing trader.

We have now set the 4 important aspects –

1. The charting software – Suggest you use Zerodha's Pi
2. Timeframe – End of Day data

3. Opportunity Universe – Nifty 50 stocks
4. Trade type – Positional trades with an option to square off intraday, provided the target hits the same day
5. Look back period – Between 6 months to 1 year. Increase to 2 years while plotting the S&R level

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

### **Part 1 – The Short listing process**

1. I look at the chart of all the stocks within my opportunity universe
2. While looking at the chart, my attention is only on the recent 3 or maximum 4 candles
3. While looking at the recent 3 candles, I check if there is any 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**

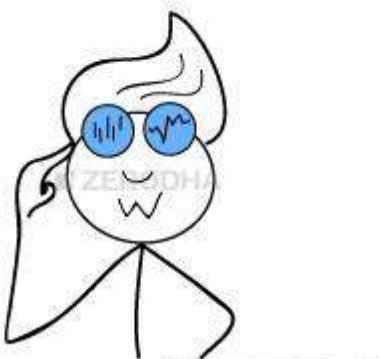
At this stage, I am usually left with 4-5 shortlisted stocks (out of the 50 stocks in my opportunity universe) which exhibit a recognisable candlestick pattern. I then proceed to evaluate these 4-5 charts in detail. Typically I spend at least 15 – 20 minutes on each chart. Here is what I do when looking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

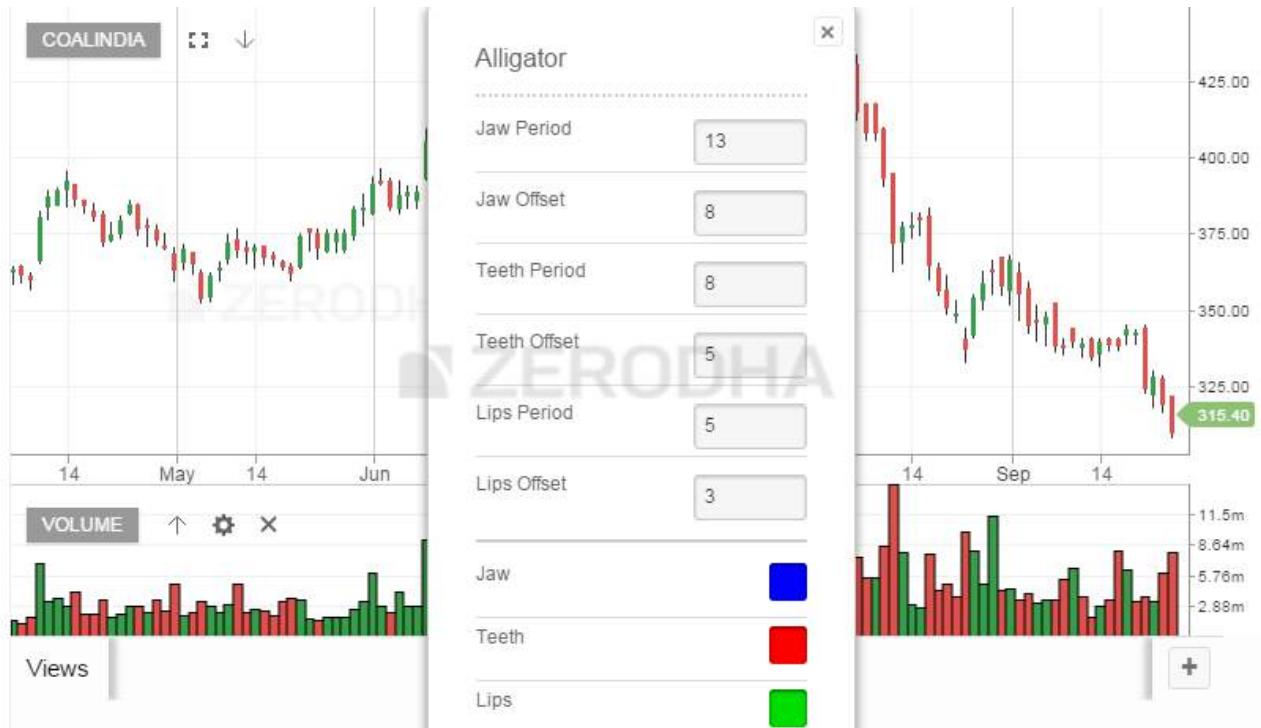
### What should you know?

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 were 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  $1320 - 48 = \mathbf{1272}$  and  $1320 + 48 = \mathbf{1368}$
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 its 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

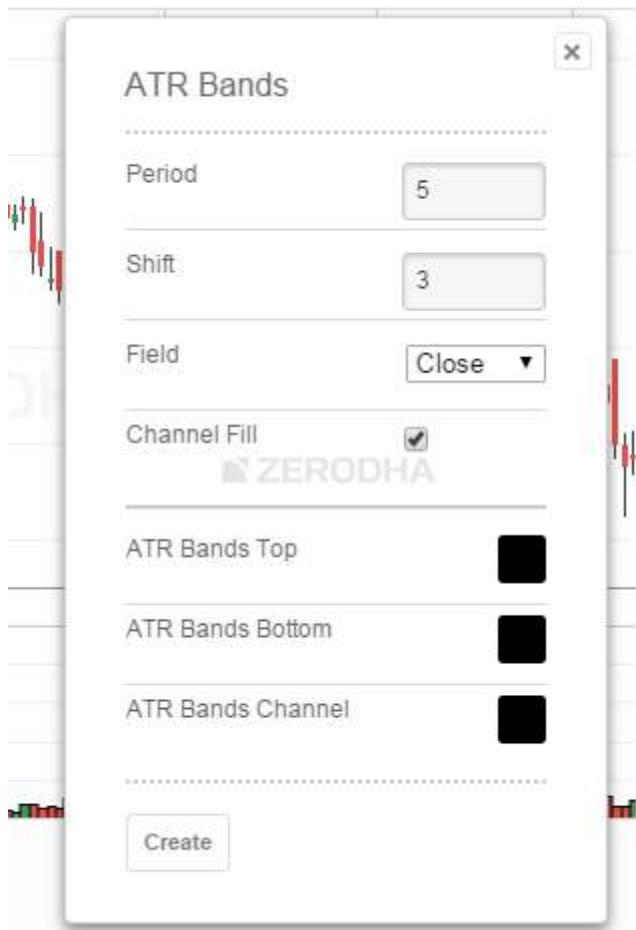
The ATR bands are an extension of the ATR concept. The idea is to plot an envelope around the stock price to evaluate if the stock prices are behaving “normally” or trending in a particular direction. In order to do this, the ATR band calculates the upper and lower band.

### 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 –



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.

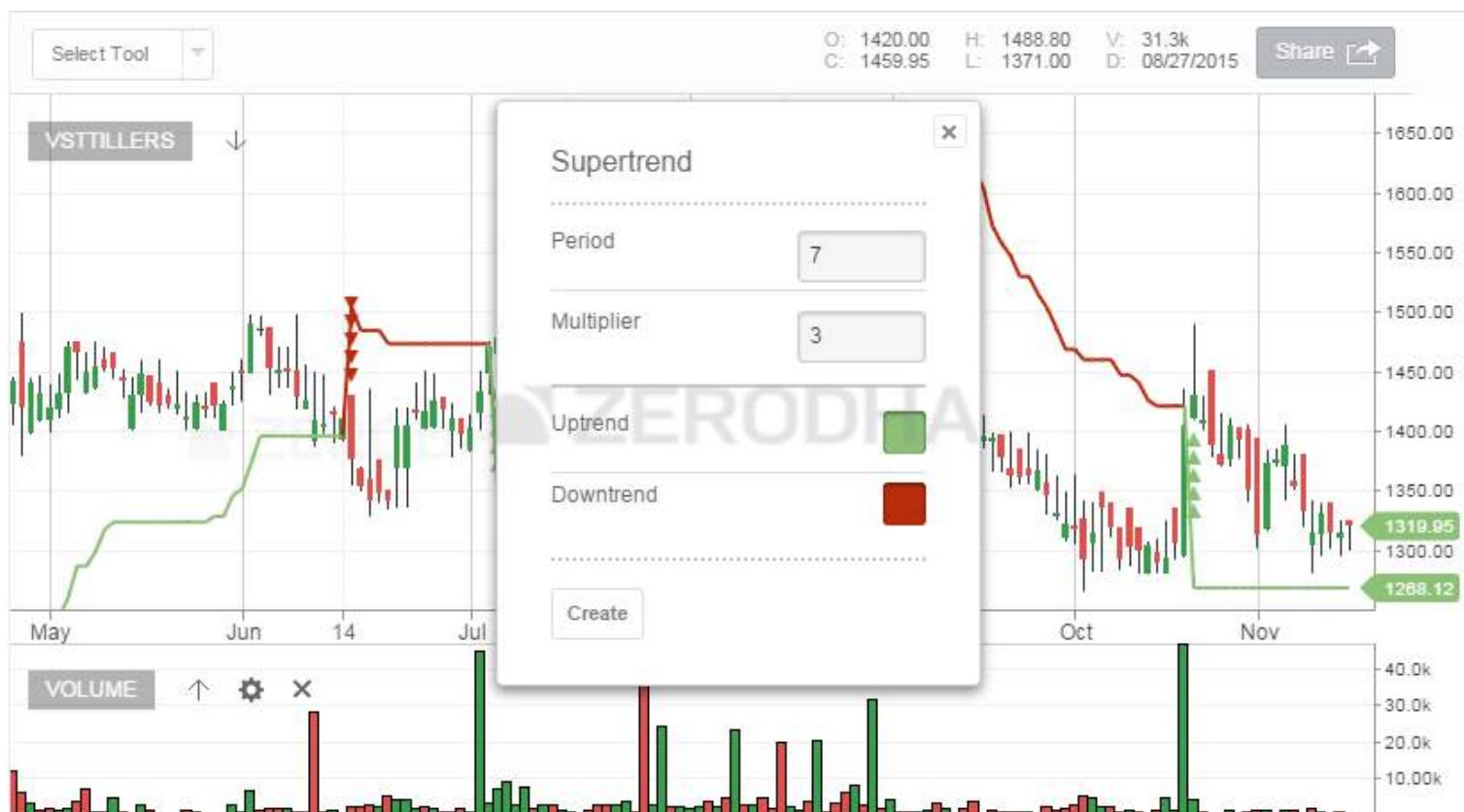
### What should you know?

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

6. 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
7. Supertrend is basically used to identify a trend therefore it works best in a trending market
8. 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.

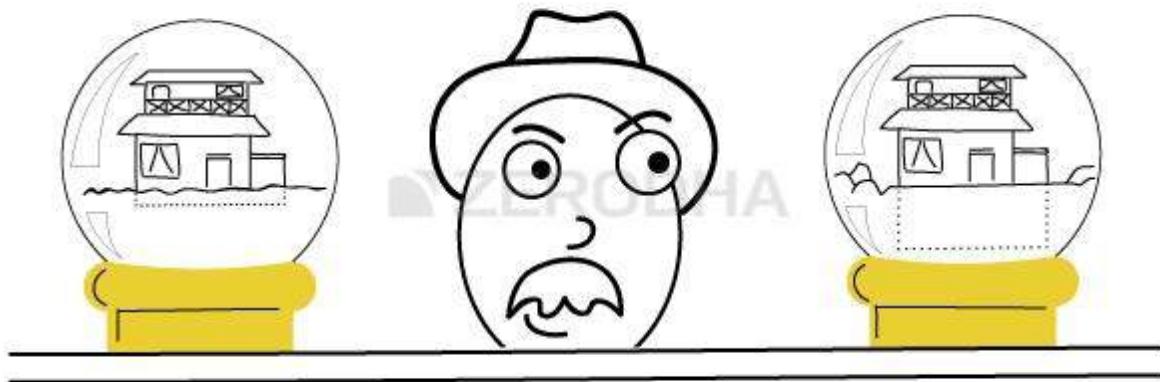


You can now visualize the VWAP and the current market price and plan your trades accordingly.

## Fundamental Analysis



# Introduction to Fundamental Analysis



## 1.1 – Overview

Fundamental Analysis (FA) is a holistic approach to study a business. When an investor wishes to invest in a business for the long term (say 3 – 5 years) it becomes extremely essential to understand the business from various perspectives. It is critical for an investor to separate the daily short term noise in the stock prices and concentrate on the underlying business performance. Over the long term, the stock prices of a fundamentally strong company tend to appreciate, thereby creating wealth for its investors.

We have many such examples in the Indian market. To name a few, one can think of companies such as Infosys Limited, TCS Limited, Page Industries, Eicher Motors, Bosch India, Nestle India, TTK Prestige etc. Each of these companies have delivered on an average over 20% compounded annual growth return (CAGR) year on year for over 10 years. To give you a perspective, at a 20% CAGR the investor would double his money in roughly about 3.5 years. Higher the CAGR faster is the wealth creation process. Some companies such as Bosch India Limited have delivered close to 30% CAGR. Therefore, you can imagine the magnitude, and the speed at which wealth is created if one would invest in fundamentally strong companies.

Here are long term charts of Bosch India, Eicher Motors, and TCS Limited that can set you thinking about long term wealth creation. Do remember these are just 3 examples amongst the many that you may find in Indian markets.



At this point you may be of the opinion that I am biased as I am selectively posting charts that look impressive. You may wonder how the long term charts of companies such as Suzlon Energy, Reliance Power, and Sterling Biotech may look? Well here are the long term charts of these companies:



These are just 3 examples of the wealth destructors amongst the many you may find in the Indian Markets.

The trick has always been to separate the investment grade companies which create wealth from the companies that destroy wealth. All investment grade companies

have a few common attributes that sets them apart. Likewise all wealth destructors have a few common traits which is clearly visible to an astute investor.

Fundamental Analysis is the technique that gives you the conviction to invest for a long term by helping you identify these attributes of wealth creating companies.

## 1.2 – Can I be a fundamental analyst?

Of course you can be. It is a common misconception that only chartered accountants and professionals from a commerce background can be good fundamental analysts. This is not true at all. A fundamental analyst just adds 2 and 2 to ensure it sums up to 4. To become a fundamental analyst you will need few basic skills:

1. Understanding the basic financial statements
2. Understand businesses with respect to the industry in which it operates
3. Basic arithmetic operations such as addition, subtraction, division, and multiplication

The objective of this module on Fundamental Analysis is to ensure that you gain the first two skill sets.

## 1.3 – I'm happy with Technical Analysis, so why bother about Fundamental Analysis?

Technical Analysis (TA) helps you garner quick short term returns. It helps you time the market for a better entry and exit. However TA is not an effective approach to create wealth. Wealth is created only by making intelligent long term investments. However, both TA & FA must coexist in your market strategy. To give you a perspective, let me reproduce the chart of Eicher Motors:



Let us say a market participant identifies Eicher motors as a fundamentally strong stock to invest, and therefore invests his money in the stock in the year 2006. As you can see the stock made a relatively negligible move between 2006 and 2010. The real move in Eicher Motors started only from 2010. This also means FA based investment in Eicher Motors did not give the investor any meaningful return between 2006 and 2010. The market participant would have been better off taking short term trades during this time. Technical Analysis helps the investor in taking short term trading bets. Hence both TA & FA should coexist as a part of your market strategy. In fact, this leads us to an important capital allocation strategy called "The Core Satellite Strategy".

Let us say, a market participant has a corpus of Rs.500,000/- . This corpus can be split into two unequal portions, for example the split can be 60 – 40. The 60% of capital which is Rs.300,000/- can be invested for a long term period in fundamentally strong companies. This 60% of the investment makes up the core of the portfolio. One can expect the core portfolio to grow at a rate of at least 12% to 15% CAGR year on year basis.

The balance 40% of the amount, which is Rs.200,000/- can be utilized for active short term trading using Technical Analysis technique on equity, futures, and options. The Satellite portfolio can be expected to yield at least 10% to 12% absolute return on a yearly basis.



#### 1.4 – Tools of FA

The tools required for fundamental analysis are extremely basic, most of which are available for free. Specifically you would need the following:

1. Annual report of the company – All the information that you need for FA is available in the annual report. You can download the annual report from the company's website for free

2. Industry related data – You will need industry data to see how the company under consideration is performing with respect to the industry. Basic data is available for free, and is usually published in the industry's association website
3. Access to news – Daily News helps you stay updated on latest developments happening both in the industry and the company you are interested in. A good business news paper or services such as Google Alert can help you stay abreast of the latest news
4. MS Excel – Although not free, MS Excel can be extremely helpful in fundamental calculations

With just these four tools, one can develop fundamental analysis that can rival institutional research. You can believe me when I say that you don't need any other tool to do good fundamental research. In fact even at the institutional level the objective is to keep the research simple and logical.

---

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

1. Fundamental Analysis is used to make long term investments
2. Investment in a company with good fundamentals creates wealth
3. Using Fundamental Analysis one can separate out an investment grade company from a junk company
4. All investment grade companies exhibit few common traits. Likewise all junk companies exhibit common traits
5. Fundamental analysis helps the analysts identify these traits
6. Both Technical analysis and fundamental analysis should coexist as a part of your market strategy
7. To become a fundamental analyst, one does not require any special skill. Common sense, basic mathematics, and a bit of business sense is all that is required
8. A core satellite approach to the capital allocation is a prudent market strategy
9. The tools required for FA are generally very basic, most of these tools are available for free.

## Mindset of an Investor

### 2.1- Speculator Vs Trader Vs Investor

Depending on how you would like to participate in the market, you can choose to speculate, trade or invest. All the three types of participation are different from one another. One has to take a stance on the type of market participant he would like to be. Having clarity on this can have a huge impact on his Profit & Loss account.



To help you get this clarity, let us consider a market scenario and identify how each one of the market participants (speculator, trader, and investor) would react to it.

#### SCENARIO

RBI in the next two days is expected to convene to announce their latest stance on the monetary policy. Owing to the high and sticky inflation, RBI has hiked the interest rates during the previous 4 monetary policy reviews. Increase in interest rates, as we know means tougher growth prospects for Corporate India – hence corporate earnings would take a hit.

Assume there are three market participants – Sunil, Tarun, and Girish. Each of them view the above scenario differently, and hence would take different actions in the market. Let us go through their thought process.

(Please note: I will briefly speak about option contracts here, this is only for illustration purpose. We will understand more about derivatives in the subsequent modules)



**Sunil:** He thinks through the situation and his thought process is as follows:

- He feels the interest rates are at an unsustainably high level
- High interest rates hampers the growth of corporate India
- He also believes that RBI has hiked the interest rates to a record high level and it would be really tough for RBI to hike the rate again
- He looks at what the popular analysts on TV are opinionating about the situation, and he is happy to note that his thoughts and the analyst thoughts are similar
- He concludes that RBI is likely to cut the rates if not for keeping the interest rates flat
- As an outcome, he expects the market to go up

**To put his thoughts into action, he buys call options of State Bank of India.**



**Tarun:** He has a slightly different opinion about the situation. His thought process is as below:

- He feels expecting RBI to cut the rates is wishful thinking. In fact he is of the opinion that nobody can clearly predict what RBI is likely to do
- He also identifies that the volatility in the markets is high, hence he believes that option contracts are trading at very high premiums
- He knows from his previous experience (via back testing) that the volatility is likely to drop drastically just after RBI makes its announcement

**To put his thoughts into action, he sells 5 lots of Nifty Call options and expects to square off the position just around the announcement time.**



**Girish:** He has a portfolio of 12 stocks which he has been holding for over 2 years. Though he is a keen observer of the economy, he has no view on what RBI is likely to do. He is also not worried about the outcome of the policy as he anyway plans to hold on to his shares for a long period of time. Hence with this perspective he feels the monetary policy is yet another short term passing tide in the market and will not have a major impact on his portfolio. Even if it does, he has both the time and patience to hold on to his shares.

However, Girish plans to buy more of his portfolio shares if the market overreacts to the RBI news and his portfolio stocks falls steeply after the announcement is made.

Now, what RBI will eventually decide and who makes money is not our concern. The point is to identify who is a speculator, a trader, and an investor based on their thought process. All the three men seem to have logic based on which they have taken a market action. Please note, Girish's decision to do nothing itself is a market action.

Sunil seems to be highly certain on what RBI is likely to do and therefore his market actions are oriented towards a rate cut. In reality it is quite impossible to call a shot on what RBI (or for that matter any regulator) will do. These are complex matters and not straightforward to analyze. Betting on blind faith, without a rational reasoning backing ones decision is speculation. Sunil seems to have done just that.

Tarun has arrived at what needs to be done based on a plan. If you are familiar with options, he is simply setting up a trade to take advantage of the high options premium. He is clearly not speculating on what RBI is likely to do as it does not matter to him. His view is simple – volatility is high; hence the premiums are attractive for an options seller. He is expecting the volatility to drop just prior to RBI decision.

Is he speculating on the fact that the volatility will drop? Not really, because he seems to have back tested his strategy for similar scenarios in the past. A trader designs all his trades and not just speculates on an outcome.

Girish, the investor on the other hand seems to be least bit worked up on what RBI is expected to do. He sees this as a short term market noise which may not have any major impact on his portfolio. Even if it did have an impact, he is of the opinion that his portfolio will eventually recover from it. Time is the only luxury markets offer, and Girish is keen on leveraging this luxury to the maximum. In fact he is even prepared to buy more of his portfolio stocks in case the market overreacts. His idea is to hold on to his positions for a long period of time and not get swayed by short term market movements.

All the three of them have different mindsets which leads them to react differently to the same situation. The focus of this chapter is to understand why Girish, the investor has a long term perspective and not really bothered about short term movements in the market.

## 2.2 – The compounding effect

To appreciate why Girish decided to stay invested and not really react to short term market movement, one has to understand how money compounds. Compounding in simple terms is the ability of money to grow when the gains of year 1 is reinvested for year 2.

For example consider you invest Rs.100 which is expected to grow at 20% year on year (recall this is also called the CAGR). At the end of the first year the money is expected to grow to Rs.120. At the end of year 1 you have two options:

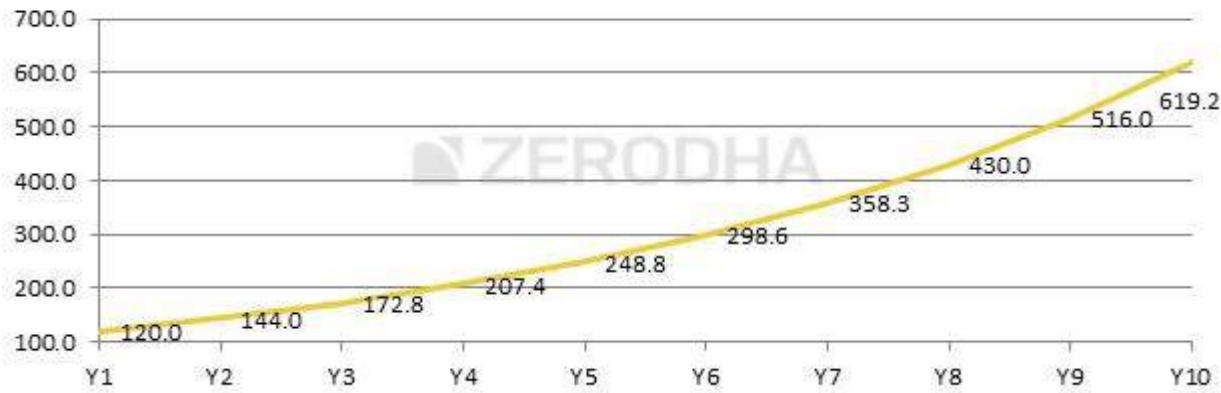
1. Let Rs.20 in profits remain invested along with the original principal of Rs.100 or
2. Withdraw the profits of Rs.20.

You decide not withdraw Rs.20 profit; instead you decide to reinvest the money for the 2<sup>nd</sup> year. At the end of 2<sup>nd</sup> year, Rs.120 grows to Rs.144. At the end of 3<sup>rd</sup> year Rs.144 grows to Rs.173. So on and so forth.

Compare this with withdrawing Rs.20 profits every year. Had you opted to withdraw Rs.20 every year then at the end of 3<sup>rd</sup> year the profits would have been just Rs. 60.

However since you decided to stay invested, the profits at the end of 3 years is Rs.173. A good Rs.13 or 21.7% over Rs.60 is generated just because you opted to do nothing and decided to stay invested. This is called the compounding effect. Let us take this analysis a little further, have a look at the chart below:

### Compounding Effect



The chart above shows how Rs.100 invested at 20% grows over a 10 year period. If you notice, it took almost 6 years for the money to grow from Rs.100 to Rs.300. However the next Rs.300 was generated in only 4 years i.e from the 6th to 10th year.

This is in fact the most interesting property of the compounding effect. The longer you stay invested, the harder (and faster) the money works for you. This is exactly why Girish decided to stay invested – to exploit the luxury of time that the market offers.

All investments made based on fundamental analysis require the investors to stay committed for the long term. The investor has to develop this mindset while he chooses to invest.

## 2.3 – Does investing work?

Think about a sapling – if you give it the right amount of water, manure, and care would it not grow? Of course it will. Likewise, think about a good business with healthy sales, great margins, innovative products, and an ethical management. Is it not obvious that the share price of such companies would appreciate? In some situations the price appreciation may delay (recall the Eicher Motors chart from previous chapter), but it certainly will always appreciate. This has happened over and over again across markets in the world, including India.

An investment in a good company defined by **investable grade attributes** will always yield results. However, one has to develop the appetite to digest short term market volatility.

## 2.4 – Investible grade attributes? What does that mean?

Like we discussed briefly in the previous chapter, an investible grade company has a few distinguishable characteristics. These characteristics can be classified under two heads namely the ‘Qualitative aspect’ and the ‘Quantitative aspects’. The process of evaluating a fundamentally strong company includes a study of both these aspects. In fact in my personal investment practice, I give the qualitative aspects a little more importance over the quantitative aspects.

**The Qualitative aspect** mainly involves understanding the non numeric aspects of the business. This includes many factors such as:

1. **Management's background** – Who are they, their background, experience, education, do they have the merit to run the business, any criminal cases against the promoters etc
2. **Business ethics** – is the management involved in scams, bribery, unfair business practices
3. **Corporate governance** – Appointment of directors, organization structure, transparency etc
4. **Minority shareholders** – How does the management treat minority shareholders, do they consider their interest while taking corporate actions
5. **Share transactions** – Is the management buying/selling shares of the company through clandestine promoter groups
6. **Related party transactions** – Is the company tendering financial favors to known entities such as promoter's relatives, friends, vendors etc at the cost of the shareholders funds?
7. **Salaries paid to promoters** – Is the management paying themselves a hefty salary, usually a percentage of profits
8. **Operator activity in stocks** – Does the stock price display unusual price behavior especially at a time when the promoter is transacting in the shares

9. **Shareholders** – Who are the significant shareholders in the firm, who are the people with above 1% of the outstanding shares of the company
10. **Political affiliation** – Is the company or its promoters too close to a political party? Does the business require constant political support?
11. **Promoter lifestyle** – Are the promoters too flamboyant and loud about their lifestyle? Do they like to display their wealth?

A red flag is raised when any of the factors mentioned above do not fall in the right place. For example, if a company undertakes too many related party transactions then it would send a signal of favoritism and malpractice by the company. This is not good in the long run. So even if the company has great profit margins, malpractice is not acceptable. It would only be a matter of time before the market discovers matters pertaining to 'related party transactions' and punishes the company by bringing the stock price lower. Hence an investor would be better off not investing in companies with great margins if such a company scores low on corporate governance.

Qualitative aspects are not easy to uncover because these are very subtle matters. However a diligent investor can easily figure this out by paying attention to annual report, management interviews, news reports etc. As we proceed through this module we will highlight various qualitative aspects.

**The quantitative aspects** are matters related to financial numbers. Some of the quantitative aspects are straightforward while some of them are not. For example cash held in inventory is straight forward however 'inventory number of days' is not. This is a metric that needs to be calculated. The stock markets pay a lot of attention to quantitative aspects. Quantitative aspects include many things, to name few:

1. Profitability and its growth
2. Margins and its growth
3. Earnings and its growth
4. Matters related to expenses
5. Operating efficiency
6. Pricing power
7. Matters related to taxes
8. Dividends payout
9. Cash flow from various activities
10. Debt – both short term and long term
11. Working capital management
12. Asset growth
13. Investments
14. Financial Ratios

The list is virtually endless. In fact, each sector has different metrics. For example:

For a retail Industry:	For an Oil and Gas Industry:
Total number of stores	Oil to Natural Gas revenue ratio
Average sales per store	Exploration costs
Total sales per square foot	Opening oil balance (inventory)
Merchandise margins	Developed reserves
Owned store to franchisee ratio	Total production growth

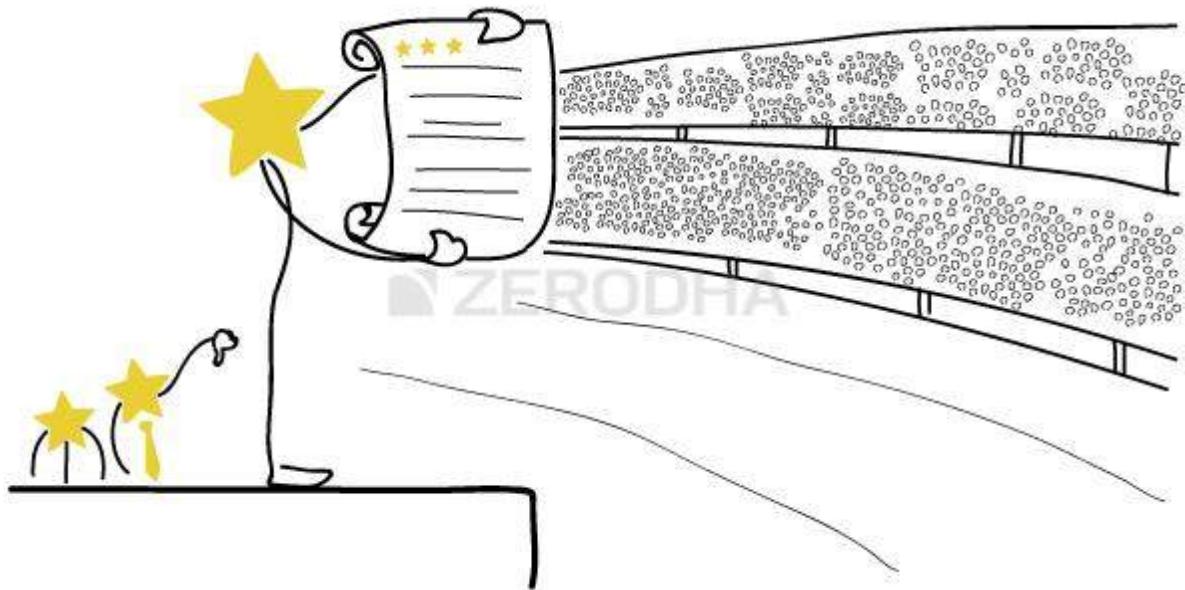
Over the next few chapters we will understand how to read the basic financial statements, as published in the annual report. As you may know, the financial statement is the source for all the number crunching as required in the analysis of quantitative aspects.

---

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

1. The mindset of a trader and an investor is different
2. The investor has to develop an investment mindset if he is serious about investing
3. The investor should stay invested for a long period of time for the returns to compound
4. The speed at which the money doubles increases drastically the more time you stay invested. This is one of the properties of compounding
5. Every investment has to be evaluated on two aspects – qualitative & quantitative
6. Qualitative aspects revolve around the non numeric information related to the company
7. The quantitative aspects involve analyzing numeric data. The financial statements are the important source of finding the quantitative data.

# How to Read the Annual Report of a Company



## **3.1 – What is an Annual Report?**

The annual report (AR) is a yearly publication by the company and is sent to the shareholders and other interested parties. The annual report is published by the end of the Financial Year, and all the data made available in the annual report is dated to 31<sup>st</sup> March. The AR is usually available on the company's website (in the investors section) as a PDF document or one can contact the company to get a hard copy of the same.

Since the annual report is published by the company, whatever is mentioned in the AR is assumed to be official. Hence, any misrepresentation of facts in the annual report can be held against the company. To give you a perspective, AR contains the auditor's certificates (signed, dated, and sealed) certifying the sanctity of the financial data included in the annual report.

Potential investors and the present shareholders are the primary audience for the annual report. Annual reports should provide the most pertinent information to an investor and should also communicate the company's primary message. For an investor, the annual report must be the default option to seek information about a company. Of course there are many media websites claiming to give the financial

information about the company; however the investors should avoid seeking information from such sources. Remember the information is more reliable if we get it directly from the annual report.

Why would the media website misrepresent the company information you may ask? Well, they may not do it deliberately but they may be forced to do it due to other factors. For example the company may like to include 'depreciation' in the expense side of P&L, but the media website may like to include it under a separate header. While this would not impact the overall numbers, it does interrupt the overall sequencing of data.

### **3.2 – What to look for in an Annual Report?**

The annual report has many sections that contain useful information about the company. One has to be careful while going through the annual report as there is a very thin line between the facts presented by the company and the marketing content that the company wants you to read.

Let us briefly go through the various sections of an annual report and understand what the company is trying to communicate in the AR. For the sake of illustration, I have taken the Annual Report of Amara Raja Batteries Limited, belonging to Financial Year 2013-2014. As you may know Amara Raja Batteries Limited manufactures automobile and industrial batteries. You can download ARBL's FY2014 AR from here ([http://www.amararaja.co.in/annual\\_reports.asp](http://www.amararaja.co.in/annual_reports.asp))

Please remember, the objective of this chapter is to give you a brief orientation on how to read an annual report. Running through each and every page of an AR is not practical; however, I would like to share some insights into how I would personally read through an AR, and also help you understand what kind of information is required and what information we can ignore.

For a better understanding, I would urge you to download the Annual Report of ARBL and go through it simultaneously as we progress through this chapter.

ARBL's annual report contains the following 9 sections:

- Financial Highlights
- The Management Statement
- Management Discussion & Analysis
- 10 year Financial highlights
- Corporate Information
- Director's Report
- Report on Corporate governance
- Financial Section, and

- Notice

Note, no two annual reports are the same; they are all made to suite the company's requirement keeping in perspective the industry they operate in. However, some of the sections in the annual report are common across annual reports.

The first section in ARBL's AR is the **Financial Highlights**. Financial Highlights contains the bird's eye view on how the financials of the company looks for the year gone by. . The information in this section can be in the form of a table or a graphical display of data. This section of the annual report generally does a multi-year comparison of the operating and business metrics.

Here is the snapshot of the same:



The details that you see in the Financial Highlights section are basically an extract from the company's financial statement. Along with the extracts, the company can also include a few financial ratios, which are calculated by the company itself. I briefly look through this section to get an overall idea, but I do not like to spend too much time on it. The reason for looking at this section briefly is that, I would anyway calculate these and many other ratios myself and while I do so, I would gain greater clarity on the company and its numbers. Needless to say, over the next few chapters we will understand how to read and understand the financial statements of the company and also how to calculate the financial ratios.

The next two sections i.e the '**Management Statement**' and '**Management Discussion & Analysis**' are quite important. I spend time going through these sections. Both these sections gives you a sense on what the management of the company has to say about their business and the industry in general. As an investor or as a potential investor in the company, every word mentioned in these sections is

important. In fact some of the details related to the ‘Qualitative aspects’ (as discussed in chapter 2), can be found in these two sections of the AR.

In the ‘Management Statement’ (sometimes called the Chairman’s Message), the investor gets a perspective of how the man sitting right on top is thinking about his business. The content here is usually broad based and gives a sense on how the business is positioned. When I read through this section, I look at how realistic the management is. I am very keen to see if the company’s management has its feet on the ground. I also observe if they are transparent on discussing details on what went right and what went wrong for the business.

One example that I explicitly remember was reading through the chairman’s message of a well established tea manufacturing company. In his message, the chairman was talking about a revenue growth of nearly 10%, however the historical revenue numbers suggested that the company’s revenue was growing at a rate of 4-5%. Clearly in this context, the growth rate of 10% seemed like a celestial move. This also indicated to me that the man on top may not really be in sync with ground reality and hence I decided not to invest in the company. Retrospectively when I look back at my decision not to invest, it was probably the right decision.

Here is the snapshot of Amara Raja Batteries Limited; I have highlighted a small part that I think is interesting. I would encourage you to read through the entire message in the Annual Report.



*dear friends,*

The Company's product sales are climbing; brands have been a resounding success; factories are buzzing with activity; people are happy and you, the shareholders, are satisfied.

Logic says we should be content. Rationality guides us to make incremental investments. Prudence advises cautious aggression.

At this crucial juncture, we can either be satisfied with the bountiful returns; or undertake the challenge of doing the extraordinary that transforms the perception of the brand and the corporate in the minds of the

whole. Here at Amara Raja, we have opted for the latter option. Case in point: we initiated our largest capacity augmentation exercise at a time when most corporates chose to put their capex investments on the backburner.

Because Amara Raja has relentlessly attempted to outperform the prevailing growth averages. And has inevitably made it happen through a combination of superior product quality, distinctive positioning, attractive price-value proposition, enduring OEM customer relationships, deeper distribution network, prudent fiscal management and a proactive ability to invest ahead of the curve.

The efficacy of this approach is reflected in the superior numbers that Amara Raja posted in 2013-14 – 16.15% increase in revenues, 28.16% in profit after tax, growth in return on capital employed by 78 bps - even as the Indian economy reported its second slowest growth of the last 10 years in 2013-14.

**Recharged**

Recharged – this single word aptly sums up the energy within Amara Raja's team, which provides assurance that our largest capacity augmentation investment will turn out to be an unprecedented success. For it is not

Moving ahead, the next section is the '**Management Discussion & Analysis**' or '**MD&A**'. This according to me is perhaps one of the most important sections in the whole of AR. The most standard way for any company to start this section is by talking about the macro trends in the economy. They discuss the overall economic activity of the country and the business sentiment across the corporate world. If the company has high exposure to exports, they even talk about global economic and business sentiment.

ARBL has both exports and domestic business interest; hence they discuss both these angles in their AR. See the snapshot below:



#### Global economy

The global economy remains subdued as global GDP growth decelerated for the third year – 3.9% in 2011 to 3.1% in 2012 and 3% in 2013. Most developed economies addressed the reality through appropriate remedial fiscal policy action. Besides, a number of emerging economies, which had already experienced a debilitating slowdown in the past two years, encountered new domestic and international headwinds during this period.

**Prospects:** Looking ahead, global growth is projected to strengthen to 3.6% in 2014 and 3.9% in 2015 (Source: IMF April 2014). Global activity is expected to improve during 2014-15, with much of the impetus coming from advanced economies. Many emerging market economies account for more than two-thirds of global growth and their output growth is likely to be lifted by exports to advanced economies.

**Challenge:** Global recovery is still fragile despite improved prospects with significant downside risks. Among old risks, those related to emerging market economies increased. According to the Global Financial Stability Report, rapid normalisation of the American monetary policy or renewed bouts of high risk aversion on the part of investors could result in further pain (Source: IMF, April 2014).

ARBL's view on the Indian economy:

### Indian economy

India's economic growth of 4.7% in 2013-14 was marginally higher than the previous year due to an improved performance in the agriculture and allied sectors.

The slowdown was primarily due to an unsupportive external environment, regulatory policy logjam, structural constraints and inflation. Despite these challenges, there were positives which provided a foundation for resurgence:

The current account deficit contracted; the fiscal deficit target was met

**India implemented substantive measures to narrow external and fiscal imbalances, tighten monetary policy, move forward on structural reforms and address market volatility to reduce vulnerability**

**India built upon its foreign exchange reserves**

The Indian economy is placed better than what it was in 2013. A dynamic government at the Centre strengthens optimism of robust economic growth, which is projected at 5.6% in 2014, rising to 6.0% in 2015 (Source: RBI).

### User sectors

**Telecom:** India's telecom industry posted a 10.1% revenue growth in 2013-14 from 8.6% in the previous fiscal despite intense competition and call rates declining to an all-time low. The improvement was largely a result of growth in the wireless subscriber base, reduced churn levels and an improvement in revenue realisation.

More importantly, 2013-14 will be regarded as a transformational year for the industry. The uncertainty of the previous years ended with fresh spectrum auctions taking place. The Department of Telecom, Government of India, announced significant initiatives - revision of the 'tower rollout policy' and the 'mergers and acquisitions'

Chilling plant cooling towers  
New plant at Nungundipalle village



Following this the companies usually talk about the trends in the industry and what they expect for the year ahead. This is an important section as we can understand what the company perceives as threats and opportunities in the industry. Most importantly I read through this, and also compare it with its peers to understand if the company has any advantage over its peers.

For example, if Amara Raja Batteries limited is a company of interest to me, I would read through this part of the AR and also would read through what Exide Batteries Limited has to say in their AR.

Remember until this point the discussion in the Management Discussion & Analysis is broad based and generic (global economy, domestic economy, and industry trends). However going forward, the company would discuss various aspects related to its business. It talks about how the business had performed across various divisions, how did it fare in comparison to the previous year etc. The company in fact gives out specific numbers in this section.

Here is a snapshot of the same:

Overview	Products	Distribution network	Customers	Niche features
Commenced operations in 2000 with technology from Johnson Controls Inc. USA. Manufacturing facility is OS-9000, ISO-14001 and TS-16949 certified	Passenger cars: Amaron® Pro, Amaron® Flo, Amaron® Go, Amaron® Black and Amaron® Fresh Commercial vehicles: Amaron® Hiway Tractors: Amaron® Harvest Two-wheeler: Amaron Pro Bike Rider™	Amaron® network comprises 294 franchised distributors, including 25,000-plus retailers PowerZone™ network comprises 1,100 retail outlets ensuring widespread semi-urban and rural presence	Major OEM customers: Ford, Maruti Suzuki, Hyundai, Honda, M&M, Tata, Volvo, Eicher, Daimler Benz, Tafe Tractors, Isuzu Motors among others Major private label customers: Bosch, Lucas, Cummins and AC Delco Leading player in the aftermarket segment among four-wheelers	Battery supplier to the entire 'Comfort Delgro' taxi fleet in Singapore 100% share of business with Ford India and Daimler Benz 100% share of business in Maruti A-Star exports and Hyundai EON First supplier of batteries to Mahindra and Mahindra for Scorpio micro hybrid vehicles First to introduce zero maintenance four-wheeler batteries and VRLA two-wheeler batteries First to provide extended warranties to consumers

Some companies even discuss their guidelines and strategies for the year ahead across the various verticals they operate in. Do have a look at the snapshot below:

**Rising rural income:** The government shifted its focus towards rural sector development. The government's crop price support policy over the last five years has led to higher rural incomes.

**Aftermarket**  
Every vehicle added on Indian roads creates an aftermarket opportunity as batteries need to be changed every few years. So while OE demand extends only to assembly, the aftermarket demand stays upbeat across useful asset life, making the aftermarket a significantly larger opportunity. And while the OE market may experience volatility consequent to economic and business

cycles, the aftermarket growth rate remains relatively stable.

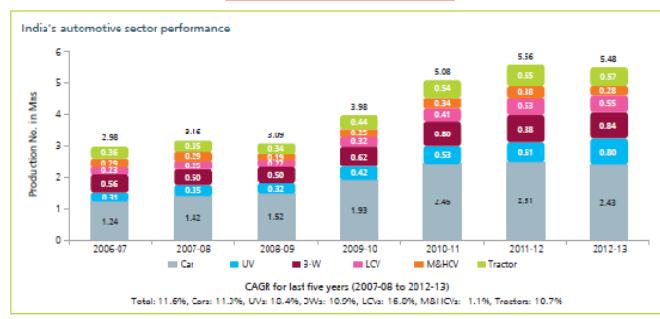
Since the battery is a critical component in every automobile (including a two-wheeler), long life and reliability are the most important factors influencing purchase. With the organised sector providing a superior value-proposition, there is an increasing shift towards branded batteries in the aftermarket segment.

#### Amara Raja's strategy

**Aftermarket:** The Company's significant presence in the aftermarket segment de-risks it from sectoral cyclicity. Going forward, the Company will continue to

strengthen its distribution network by entering areas where its penetration is low, filling gaps in its product range and ensuring supply chain efficiency. Moreover, the Company will continue to invest in brand promotion and ground-level initiatives to develop a stronger bond with customers, retailers and distributors.

**OE market:** While the aftermarket is the key revenue earner, the Company is also working to forge stronger relationships with leading and reputed OE players in the automotive market, which will increase its brand preference at the time of replacement.



(Source: SIAM)

After discussing these in 'Management Discussion & Analysis' the annual report includes a series of other reports such as – Human Resources report, R&D report, Technology report etc. Each of these reports are important in the context of the

industry the company operates in. For example, if I am reading through a manufacturing company annual report, I would be particularly interested in the human resources report to understand if the company has any labor issues. If there are serious signs of labor issues then it could potentially lead to the factory being shut down, which is not good for the company's shareholders.

### 3.3 – The Financial Statements

Finally, the last section of the AR contains the financial statements of the company. As you would agree, the financial statements are perhaps one of the most important aspects of an Annual Report. There are three financial statements that the company will present namely:

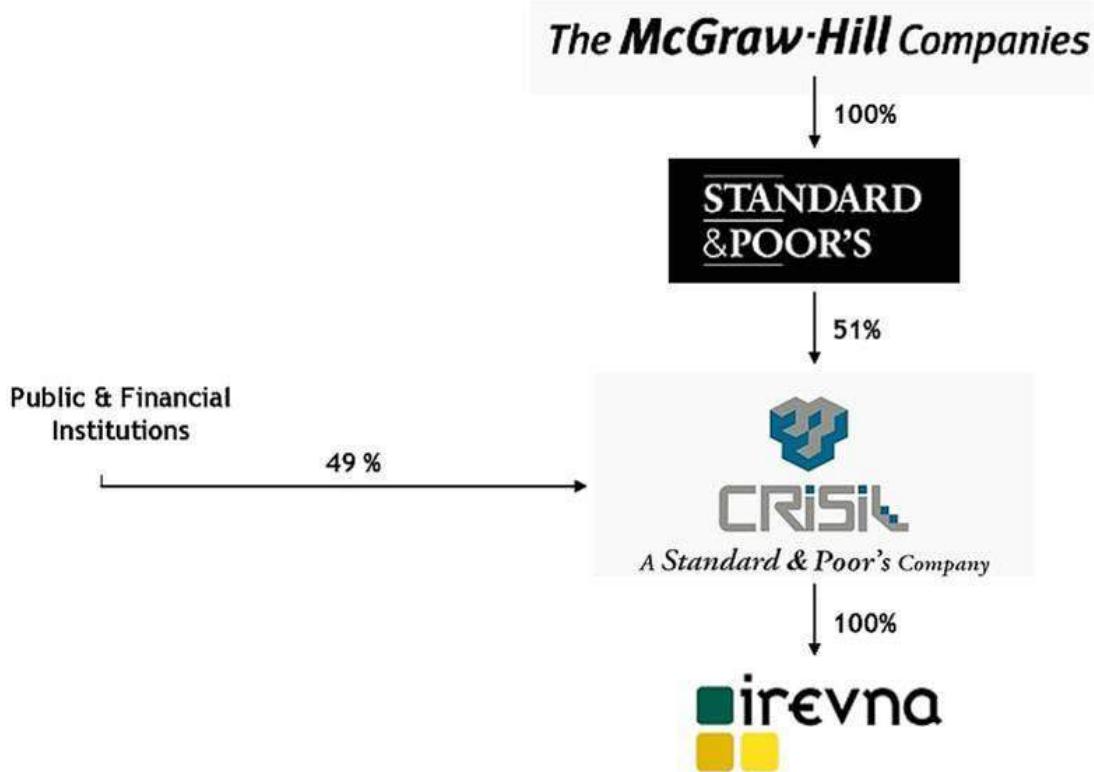
1. The Profit and Loss statement
2. The Balance Sheet and
3. The Cash flow statement

We will understand each of these statements in detail over the next few chapters. However at this stage it is important to understand that the financial statements come in two forms.

1. Standalone financial statement or simply standalone numbers and
2. Consolidated financial statement or simply consolidated numbers

To understand the difference between standalone and consolidated numbers, we need to understand the structure of a company.

Typically, a well established company has many subsidiaries. These companies also act as a holding company for several other well established companies. To help you understand this better, I have taken the example of CRISIL Limited's shareholding structure. You can find the same in CRISIL's annual report. As you may know, CRISIL is an Indian company with a major focus on corporate credit rating services.



As you can see in the above share holding structure:

1. Standard & Poor's (S&P), a US based rating agency holds a 51% stake in CRISIL. Hence S&P is the 'Holding company' or the 'Promoter' of CRISIL
2. The balance 49% of shares of CRISIL is held by Public and other Financial institutions
3. However, S&P itself is 100% subsidiary of another company called 'The McGraw-Hill Companies'
1. This means McGraw Hill fully owns S&P, and S&P owns 51% of CRISIL
4. Further, CRISIL itself fully owns (100% shareholding) another company called 'Irevna'.

Keeping the above in perspective, think about this hypothetical situation. Assume, for the financial year 2014, CRISIL makes a loss of Rs.1000 Crs and Irevna, its 100% subsidiary makes a profit of Rs.700 Crs. What do you would be the overall profitability of CRISIL?

Well, this is quite simple – CRISIL on its own made a loss of Rs.1000 Crs, but its subsidiary Irevna made a profit of Rs.700 Crs, hence the overall P&L of CRISIL is (Rs.1000 Crs) + Rs.700 Crs = (Rs.300 Crs).

Thanks to its subsidiary, CRISIL's loss is reduced to Rs.300 Crs as opposed to a massive loss of Rs.1000 Crs. Another way to look at it is, CRISIL on a **standalone** basis made a loss of Rs.1000 Crs, but on a **consolidated** basis made a loss of Rs.300 Crs.

Hence, Standalone Financial statements represent the standalone numbers/ financials of the company itself and do not include the financials of its subsidiaries. However the consolidated numbers includes the companies (i.e.standalone financials) and its subsidiaries financial statements.

I personally prefer to look through the consolidated financial statements as it gives a better representation of the company's financial position.

### 3.4 – Schedules of Financial Statements

When the company reports its financial statements, they usually report the full statement in the beginning and then follow it up with a detailed explanation.

Have a look at the snapshot of one of ARBL's financial statement (balance sheet):

Balance Sheet as at March 31, 2014		₹ million	
Particulars	Note No.	As at March 31, 2014	As at March 31, 2013
<b>EQUITY AND LIABILITIES</b>			
Shareholders' funds			
Share capital	2	170.81	170.81
Reserves and surplus	3	13,456.20	10,427.33
		13,627.01	10,598.14
Non-current liabilities			
Long-term borrowings	4	759.47	773.13
Deferred tax liabilities (net)	5	301.33	195.09
Long-term provisions	6	369.57	376.41
		1,430.37	1,344.63
Current liabilities			
Short-term borrowings	7	83.83	98.63
Trade payables	8	1,277.79	1,362.84
Other current liabilities	9	2,156.68	1,807.26
Short-term provisions	6	2,818.73	2,493.20
		6,337.03	5,761.93
<b>Total</b>		<b>21,394.41</b>	<b>17,704.70</b>

Each particular in the financial statement is referred to as the line item. For example the first line item in the Balance Sheet (under Equity and Liability) is the share capital (as pointed out by the green arrow). If you notice, there is a note number associated with share capital. These are called the 'Schedules' related to the financial statement. Looking into the above statement, ARBL states that the share capital stands at Rs.17.081 Crs (or Rs.170.81 Million). As an investor I obviously would be interested to know how ARBL arrived at Rs.17.081 Crs as their share capital. To figure this out, one needs to look into the associated schedule (note number 2). Please look at the snapshot below:

## Notes forming part of the Financial Statements

Particulars	₹ million	
	As at March 31, 2014	As at March 31, 2013
<b>Equity share capital</b>		
Authorised		
200,000,000 Equity shares of ₹1 each	200.00	200.00
Issued	-	-
175,028,500 Equity shares of ₹1 each	175.03	175.03
Subscribed and paid up	-	-
170,812,500 Equity shares of ₹1 each	170.81	170.81
<b>Total</b>	<b>170.81</b>	<b>170.81</b>

Of course, considering you may be new to financial statements, jargon's like share capital make not make much sense. However the financial statements are extremely simple to understand, and over the next few chapters you will understand how to read the financial statements and make sense of it. But for now do remember that the main financial statement gives you the summary and the associated schedules give the details pertaining to each line item.

---

## Key takeaways from this chapter

1. The Annual Report (AR) of a company is an official communication from the company to its investors and other stakeholders
2. The AR is the best source to get information about the company; hence AR should be the default choice for the investor to source company related information
3. The AR contains many sections, with each section highlighting certain aspect of the business
4. The AR is also the best source to get information related to the qualitative aspects of the company
5. The management discussion and analysis is one of the most important sections in the AR. It has the management's perspective on the overall economy of the country, their outlook on the industry they operate in for the year gone by (what went right and what went wrong), and what they foresee for the year ahead
6. The AR contains three financial statements – Profit & Loss statement, Balance Sheet, and Cash Flow statement
7. The standalone statement contains the financial numbers of only the company in consideration. However the consolidated numbers contains the company and its subsidiaries financial numbers.

# Understanding the P&L Statement (Part 1)

## **4.1 – Overview of the financial statements**

You can think about the financial statements from two different angles:

1. From the maker's perspective
2. From the user's perspective

A maker prepares the financial statements. He is typically a person with an accounting background. His job involves preparing ledger entries, matching bills and receipts, tallying the inflows versus the outflows, auditing etc. The final objective of the is to prepare transparent financial statements which best represents the true financial position of the company. To prepare such a financial statement certain skills are required, usually these skills are developed through the rigor of a Chartered Accountant's training program.

The user on the other hand just needs to be in a position to understand what the maker has prepared. He is just the user of the financial statements. He need not really know the details of the journal entries or the audit procedure. His main concern is to read what is being stated and use it to make his decisions.

To put this in context, think about Google. Most of us do not understand Google's complex search engine algorithm that runs in the backend, however we all know how to use Google effectively. Such is the distinction between the maker and the user of financial statements.

A common misconception amongst the market participants is that, they believe the fundamental analyst needs to be thorough with concepts of financial statement preparation. While knowing this certainly helps, it is not really required. To be a fundamental analyst, one just needs to be the user and not the maker of the financial statements.

There are three main financial statements that a company showcases to represent its performance.

1. The Profit and Loss statement
2. The Balance Sheet
3. The Cash flow statement

Over the next few chapters we will understand each of these statements from the user's perspective.

## 4.2 – The Profit and Loss statement

The Profit and Loss statement is also popularly referred to as the P&L statement, Income Statement, Statement of Operations, and Statement of Earnings. The Profit and Loss statement shows what has transpired during a time period. The P&L statement reports information on:

1. The revenue of the company for the given period (yearly or quarterly)
2. The expenses incurred to generate the revenues
3. Tax and depreciation
4. The earnings per share number

From my experience, the financial statements are best understood by looking at the actual statement and figuring out the information. Hence, here is the P&L statement of Amara Raja Batteries Limited (ARBL). Let us understand each and every line item.

Statement of Profit and Loss for the year ended March 31, 2014		₹ million	
Particulars	Note No.	Year ended March 31, 2014	Year ended March 31, 2013
<b>REVENUE</b>			
Sale of products		38,041.27	32,949.37
Less: Excise duty		4,005.15	3,512.45
Net sale of products		34,036.12	29,436.92
Sale of services		309.32	137.02
Other operating revenue		21.15	15.21
Net revenue from operations	17	34,366.59	29,589.15
Other income	18	455.14	465.51
<b>Total Revenue</b>		<b>34,821.73</b>	<b>30,054.66</b>
<b>EXPENSES</b>			
Cost of materials consumed	19	21,011.95	17,603.12
Purchases of stock-in-trade	20	2,113.69	2,632.54
Changes in inventories of finished goods, work-in-process and stock-in-trade	20	(292.10)	(320.89)
Employee benefits expense	21	1,583.16	1,262.30
Finance costs	22	7.18	2.69
Depreciation and amortisation expense [includes impairment loss of ₹Nil (PY ₹75.52 million)]	23	645.71	660.92
Other expenses	24	4,346.60	3,904.24
<b>Total Expenses</b>		<b>29,416.19</b>	<b>25,744.92</b>
<b>Profit before exceptional items and tax</b>		<b>5,405.54</b>	<b>4,309.74</b>
Less: Exceptional items (net)	33	38.84	91.57
<b>Profit before tax</b>		<b>5,366.70</b>	<b>4,218.17</b>
Less: Tax expense			
Current tax		1,580.00	1,377.97
Deferred tax (credit) / expense		106.23	(24.51)
Earlier year's (excess) / short provision		6.11	(2.34)
<b>Profit for the year</b>		<b>3,674.36</b>	<b>2,867.05</b>
Basic and diluted earnings per equity share of ₹1 each	37	21.51	16.78

### 4.3 – The Top Line of the company (Revenue)

You may have heard analysts talk about the top line of a company. When they do so, they are referring to the revenue side of the P&L statement. The revenue side is the first set of numbers the company presents in the P&L.



Before we start understanding the revenue side, let us notice a few things mentioned on the header of the P&L statement:

Statement of Profit and Loss for the year ended March 31, 2014		₹ million	
Particulars	Note No.	Year ended March 31, 2014	Year ended March 31, 2013

The header clearly states:

1. The statement of P&L for the year **ending** March 31, 2014, hence this is an annual statement and not a quarterly statement. Also, since it is as of March 31<sup>st</sup> 2014 it is evident that the statement is for the Financial Year 2013 – 2014 or simply it can be referred to as the FY14 numbers
2. All currency is denominated in Rupee Million. Note – 1 Million Rupees is equal to Ten Lakh Rupees. It is upto the company's discretion to decide which unit they would prefer to express their numbers in
3. The particulars show all the main headings of the statement. Any associated note to the particulars is present in the note section (also called the schedule). An associated number is assigned to the note (Note Number)
4. By default when companies report the numbers in the financial statement they present the current year number on the left most column and the previous year number to the right. In this case the numbers are for FY14 (latest) and FY13 (previous)

The first line item on the revenue side is called the **Sale of Products**.

Since we know we are dealing with a batteries company, clearly sale of products means the Rupee value of all the battery sales the company has sold during FY14. The sales stand at Rs.38,041,270,000/- or about Rs.3,804 Crore. The company sold batteries worth Rs.3,294 Cr in the previous financial year i.e FY13.

Please note, I will restate all the numbers in Rupee Crore as I believe this is more intuitive to understand.

The next line item is the excise duty. This is the amount (Rs.400 Crs) the company would pay to the government; hence the revenue has to be adjusted.

The revenue adjusted after the excise duty is the **net sales of the company**. The net sales of ARBL is Rs.3403 Crs for FY14. The same was Rs.2943 Crs for FY13.

Apart from the sale of products, the company also draws revenue from services. This could probably be in the form of annual battery maintenance. The revenue from sale of services stands at Rs.30.9Crs for FY14.

The company also includes “other operating revenues” at Rs.2.1crs. This could be revenues through the sale of products or services that is incidental to the core operations of the company.

Finally the revenue from Sale of products + Sale of services + Other operating revenues sums up to give the **total operating revenue** of the company. This is reported at Rs.3436 Crs for FY14 and Rs.2959Crs for FY13. Interesting, there is a note; numbered 17 associated with “Net Revenue from Operations” which will help us inspect this aspect further.

Do recall, in the previous chapter we had discussed about notes and schedules of the financial statement.

The following snapshot gives the details of note 17.

## Notes forming part of the Financial Statements

### NOTE 17: REVENUE FROM OPERATIONS

Particulars	Year ended March 31, 2014	Year ended March 31, 2013 ₹ million
a) Sale of products		
Storage batteries (finished goods)	35,237.83	30,363.83
Storage batteries (stock-in-trade)	2,089.86	1,493.93
Home UPS (stock-in-trade)	713.58	1,091.61
Gross revenue from sale of products	38,041.27	32,949.37
Less: Excise duty	4,005.15	3,512.45
Net revenue from sale of products	34,036.12	29,436.92
b) Sale of services		
Installation and commissioning	49.14	17.36
Annual maintenance	146.91	96.09
Preventive maintenance	15.41	5.75
Other services	97.86	17.82
Net revenue from sale of services	309.32	137.02
c) Other operating revenue		
Sale of process scrap	21.15	15.21
Net revenue from operations	34,366.59	29,589.15

Clearly, the notes give a more detailed analysis of the split up of **revenues from operations** (does not include other income details). As you can see under the particulars, section 'a' talks about the split up under sales of products.

1. Sale of storage batteries in the form of finished goods for the year FY14 is Rs.3523 Crs versus Rs.3036 Crs in FY13
2. Sale of Storage batteries (stock in trade) is Rs.208 Crs in FY14 versus 149 Crs. Stock in trade refers to finished goods of previous financial year being sold in this financial year
3. Sale of home UPS (stock in goods) is at Rs.71 Crs in FY14 versus Rs.109 Crs FY13
4. Net sales from sales of products adjusted for excise duty amounts to Rs.3403 Crs, which matches with the number reported in the P&L statement
5. Likewise you can notice the split up for revenue from services. The revenue number of Rs.30.9 tallies with number reported in the P&L statement
6. In the note, the company says the "Sale of Process Scrap" generated revenue of Rs.2.1 Cr. Note that the sale of process scrap is incidental to the operations of the company, hence reported as 'Other operating revenue'.
7. Adding up all the revenue streams of the company i.e Rs.3403 Crs+ Rs.30.9 Crs +Rs.2.1 Crs gets us the Net revenue from operations = Rs.3436 Crs.
8. You can also find similar split up for FY13

If you notice the P&L statement, apart from net revenue from operations ARBL also reports 'Other Income' of Rs.45.5 Crs. Note number 18 reproduced below explains what the other income is all about.

**NOTE 18: OTHER INCOME**

Particulars	Year ended March 31, 2014	Year ended March 31, 2013	₹ million
<b>Interest Income</b>			
On bank and other deposits	131.22	112.29	
Against trade receivables	6.72	10.27	
<b>Dividend income</b>			
On current investments - mutual funds	142.68	143.96	
On long term investments - equity instruments	1.51	1.31	
<b>Net gain on foreign currency transactions and translations</b>	89.88	91.71	
<b>Insurance claims</b>	32.27	13.48	
<b>Scrap Sales (non-process)</b>	14.07	6.94	
<b>Cash discount earned on early payments</b>	10.74	43.35	
<b>Provisions and credit balances written back</b>	3.90	6.44	
<b>Bad debts recovered</b>	15.15	0.25	
<b>Profit on sale of tangible fixed assets written off/discharged</b>	4.49	0.04	
<b>Provision on doubtful trade receivables/advances written back</b>	0.30	35.06	
<b>Royalty income</b>	0.94	-	
<b>Sundry income</b>	1.27	0.41	
<b>Total</b>	<b>455.14</b>	<b>465.51</b>	

As we can see the other income includes income that is not related to the main business of the company. It includes interest on bank deposits, dividends, insurance claims, royalty income etc. Usually the other income forms (and it should) a small portion of the total income. A large 'other income' usually draws a red flag and it would demand a further investigation.

So adding up revenue from operations (Rs.3436 Crs) and other income (Rs.45 Crs), we have the total revenue of for FY14 at Rs.3482Crs.

---

### Key takeaways from this chapter

1. The financial statement provides information and conveys the financial position of the company
2. A complete set of financial statements include the Profit & Loss Account, Balance Sheet and Cash Flow Statement
3. A fundamental Analyst is a user of financial statement, and he just needs to know what the maker of the financial statements states
4. The profit and loss statement gives the profitability of the company for the year under consideration
5. The P&L statement is an estimate, as the company can revise the numbers at a later point. Also by default companies publish data for the current year and the previous year, side by side
6. The revenue side of the P&L is also called the top line of the company
7. Revenue from operations is the main source of revenue for the company
8. Other operating income includes revenue incidental to the business

9. The other income includes revenue from non operating sources
10. The sum of revenue from operations (net of duty), other operating income, and other incomes gives the 'Net Revenue from Operations'

## Understanding P&L Statement (Part 2)



### 5.1 – The Expense details

In the previous chapter we had learnt about the revenues a company generates. Moving further on the P&L statement, in this chapter we will look at the expense side of the Profit and Loss Statement along with the associated notes. Expenses are generally classified according to their function, which is also called the cost of sales method or based on the nature of expense. An analysis of the expenses must be shown in the Profit and Loss statement or in the notes. As you can see in the extract below almost all the line items have a note associated to it.

EXPENSES			
Cost of materials consumed	19	21,011.95	17,603.12
Purchases of stock-in-trade	20	2,113.69	2,632.54
Changes in inventories of finished goods, work-in-process and stock-in-trade	20	(292.10)	(320.89)
Employee benefits expense	21	1,583.16	1,262.30
Finance costs	22	7.18	2.69
Depreciation and amortisation expense [includes impairment loss of ₹Nil (PY ₹75.52 million)]	23	645.71	660.92
Other expenses	24	4,346.60	3,904.24
<b>Total Expenses</b>		<b>29,416.19</b>	<b>25,744.92</b>

The first line item on the expense side is 'Cost of materials consumed'; this is invariably the cost of raw material that the company requires to manufacture

finished goods. As you can see the cost of raw material consumed/raw material is the largest expense incurred by the company. This expense stands at Rs.2101 Crs for the FY14 and Rs.1760 Crs for the FY13. Note number 19 gives the associated details for this expense, let us inspect the same.

**NOTE 19: COST OF MATERIALS CONSUMED (Contd.)**

a) Materials consumed comprise

Particulars	₹ million	
	Year ended March 31, 2014	Year ended March 31, 2013
Lead	9,882.97	8,221.83
Lead alloys	8,183.44	6,646.43
Separator	895.49	799.95
Others	2,050.05	1,934.91
<b>Total</b>	<b>21,011.95</b>	<b>17,603.12</b>

As you can see note 19 gives us the details of the material consumed. The company uses lead, lead alloys, separators and other items all of which adds up to Rs.2101 Crs.

The next two line items talks about 'Purchases of Stock in Trade' and 'Change in Inventories of finished goods , work-in-process & stock-in-trade'. Both these line items are associated with the same note (Note 20).

Purchases of stock in trade, refers to all the purchases of finished goods that the company buys towards conducting its business. This stands at Rs.211 Crs. I will give you more clarity on this line item shortly.

Change in inventory of finished goods refers to the costs of manufacturing incurred by the company in the past , but the goods manufactured in the past were sold in the present/current financial year. This stands at (Rs.29.2) Crs for the FY14.

A negative number indicates that the company produced more batteries in the FY14 than it managed to sell. To give a sense of proportion (in terms of sales and costs of sales) the company deducts the cost incurred in manufacturing the extra goods from the current year costs. The company will add this cost when they manage to sell these extra products sometime in future. This cost, which the company adds back later, will be included in the "Purchases of Stock in Trade" line item.

Here is an extract of Note 20 which details the above two line items:

**NOTE 20: PURCHASES OF STOCK IN TRADE AND CHANGES IN INVENTORIES OF FINISHED GOODS, WORK-IN-PROCESS AND STOCK-IN-TRADE**

a) PURCHASE OF STOCK-IN-TRADE

Particulars	Year ended March 31, 2014	Year ended March 31, 2013	₹ million
Storage batteries	1,619.44	1,437.71	
Home UPS	494.25	1,194.83	
<b>Total</b>	<b>2,113.69</b>	<b>2,632.54</b>	

b) CHANGES IN INVENTORIES OF FINISHED GOODS, WORK-IN-PROCESS AND STOCK-IN-TRADE

Particulars	Year ended March 31, 2014	Year ended March 31, 2013	₹ million
<b>Work-in-process</b>			
Opening stock	- Storage batteries	828.95	811.41
Less: Closing stock	- Storage batteries	1,052.11	(223.16)
		828.95	(17.54)
<b>Finished goods</b>			
Opening stock	- Storage batteries	536.44	563.49
Less: Closing stock	- Storage batteries	941.75	536.44
		(405.31)	27.05
Less: Excise Duty on (increase) / decrease of finished goods	(41.95)	(363.36)	6.12
			20.93
<b>Stock-in-trade</b>			
Opening stock	- Storage batteries	145.01	21.15
	- Home UPS	223.97	23.55
		368.98	44.70
Less: Closing stock	- Storage batteries	36.73	145.01
	- Home UPS	37.83	223.97
		74.56	294.42
			368.98
			(324.28)
<b>Net increase in inventories</b>		(292.10)	(320.89)

The details mentioned on the above extract are quite straightforward and is easy to understand. At this stage it may not be necessary to dig deeper into this note. It is good to know where the grand total lies. However, when we take up 'Financial Modeling' as a separate module we will delve deeper into this aspect.

The next line item on the expense side is "Employee Benefit Expense". This is quite intuitive as it includes expense incurred in terms of the salaries paid, contribution towards provident funds, and other employee welfare expenses. This stands at Rs.158 Crs for the FY14. Have a look at the extract of note 21 which details the 'Employee Benefit Expense'.

**NOTE 21: EMPLOYEE BENEFITS EXPENSE**

Particulars	Year ended March 31, 2014	Year ended March 31, 2013	₹ million
Salaries and wages	1,361.32	1,086.99	
Contribution to provident and other funds	81.54	69.81	
Staff welfare expenses	140.30	105.50	
<b>Total</b>	<b>1,583.16</b>	<b>1,262.30</b>	

Here is something for you to think about – A company generating Rs.3482 Crs is spending only Rs.158 Crs or just 4.5% of its sales on its employees. In fact this is the pattern across most of companies (at least non IT). Perhaps it is time for you to rethink about that entrepreneurial dream you may have nurtured.

The next line item is the "Finance Cost / Finance Charges/ Borrowing Costs". Finance cost is interest costs and other costs that an entity pays when it borrows funds. The

interest is paid to the lenders of the company. The lenders could be banks or private lenders. The company's finance cost stands at Rs.0.7 Crs for the FY14. We will discuss more about the debt and related matters when we take up the chapter on the balance sheet later.

Following the finance cost the next line item is "Depreciation and Amortization" costs which stand at Rs.64.5 Crs. To understand depreciation and amortization we need to understand the concept of tangible and intangible assets.

A tangible asset is one which has a physical form and provides an economic value to the company. For example a laptop, a printer, a car, plants, machinery, buildings etc.

An intangible asset is something that does not have a physical form but still provides an economic value to the company such as brand value, trademarks, copyrights, patents, franchises, customer lists etc.

An asset (tangible or intangible) has to be depreciated over its useful life. Useful life is defined as the period during which the asset can provide economic benefit to the company. For example the useful life of a laptop could be 4 years. Let us understand depreciation better with the help of the following example.

Zerodha, a stock broking firm generates Rs.100,000/- from the stock broking business. However Zerodha incurred an expense of Rs.65,000/- towards the purchase of a high performance computer server. The economic life (useful life) of the server is expected to be 5 years. Now if you were to look into the earning capability of Zerodha it appears that on one hand Zerodha earned Rs.100,000/- and on the other hand spent Rs.65,000/- and therefore retained just Rs.35,000/-. This skews the earnings data for the current year and does not really reflect the true earning capability of the company.

Remember the asset even though purchased this year, would continue to provide economic benefits over its useful life. Hence it makes sense to spread the cost of acquiring the asset over its useful life. This is called depreciation. This means instead of showing an upfront lump sum expense (towards purchase of an asset), the company can show a smaller amount spread across the useful life of an asset.

Thus Rs.65,000/- will be spread across the useful life of the server, which is 5. Hence  $65,000 / 5 = \text{Rs.}13,000/-$  would be depreciated every year over the next five years. By depreciating the asset, we are spreading the upfront cost. Hence after the depreciation computation, Zerodha would now show its earnings as  $\text{Rs.}100,000 - \text{Rs.}13,000 = \text{Rs.}87,000/-$ .

We can do a similar exercise for non tangible assets. The depreciation equivalent for non tangible assets is called amortization.

Now here is an important idea – Zerodha depreciates the cost of acquiring an asset over its useful life. However, in reality there is an actual outflow of Rs.65,000/- paid

towards the asset purchase. But now, it seems like the P&L is not capturing this outflow. As an analyst, how do we get a sense of the cash movement? Well, the cash movement is captured in the cash flow statement, which we will understand in the later chapters.

Here is the snapshot of Note 23, detailing the depreciation cost.

NOTE 23: DEPRECIATION AND AMORTISATION EXPENSE		₹ million
Particulars	Year ended March 31, 2014	Year ended March 31, 2013
Depreciation	634.41	652.72
Amortisation	11.30	8.20
<b>Total</b>	<b>645.71</b>	<b>660.92</b>

Note: Depreciation includes impairment provision on freehold land of ₹NIL (PY ₹75.52 million).

The last line item on the expense side is “other expenses” at Rs.434.6 Crs. This is a huge amount classified under ‘other expenses’, hence it deserves a detailed inspection.

NOTE 24: OTHER EXPENSES		₹ million	
Particulars		Year ended March 31, 2014	Year ended March 31, 2013
<b>A. Manufacturing expenses</b>			
a. Stores and spares consumed (including packing material)		449.41	378.41
b. Power and fuel		922.56	978.14
c. Insurance		8.49	7.29
d. Repairs and maintenance to			
i) Machinery	44.46	55.79	
ii) Buildings	18.72	63.18	14.28
<b>Total (A)</b>		<b>1,443.64</b>	<b>1,433.91</b>
<b>B. Selling expenses</b>			
a. Advertisement and promotion		275.85	154.41
b. Freight outward		595.20	553.25
c. Commission on sales		8.40	10.13
d. Service expenses		219.36	94.16
e. Warehousing and secondary freight		250.50	223.43
f. Other sales expenses		242.15	155.81
g. Royalty on sales		-	0.05
h. Product warranties		383.15	494.62
<b>Total (B)</b>		<b>1,974.61</b>	<b>1,685.86</b>

**NOTE 24: OTHER EXPENSES (Contd.)**

Particulars	Year ended March 31, 2014	Year ended March 31, 2013 ₹ million
<b>C. Administrative expenses</b>		
a. Rent	114.10	98.31
b. Commission to Non-Executive Chairman	175.99	140.88
c. Payment to Auditors (Refer Note No. 28)	3.92	2.73
d. Research and development expenses	4.00	2.83
e. Donations	135.42	112.23
f. Travel and conveyance	147.00	116.70
g. Repairs and maintenance to office equipment	18.50	10.27
h. Communication expenses	18.81	16.58
i. Consultancy charges	34.45	39.18
j. Information technology expenses	26.62	18.71
k. Office maintenance expenses	92.79	83.24
l. Loss on sale of current investments	0.20	-
m. Sundry expenses	96.52	77.71
<b>Total (C)</b>	<b>868.32</b>	<b>719.37</b>
<b>D. Other expenses</b>		
a. Provision for doubtful trade receivables	0.07	-
b. Bad debts and irrecoverable advances written off	32.33	4.84
Less: Opening provision reversed	30.27	2.06
c. Tangible fixed assets written off	24.90	44.27
d. Premium on forward contracts	1.08	-
<b>Total (D)</b>	<b>28.11</b>	<b>45.48</b>
<b>E. Rates and taxes (excluding Income tax)</b>		
a. Rates, taxes and licenses	5.57	3.63
b. Duties and taxes (indirect taxes)	24.35	14.16
c. Wealth tax	2.00	1.83
<b>Total (E)</b>	<b>31.92</b>	<b>19.62</b>
<b>Grand Total (A+B+C+D+E)</b>	<b>4,346.60</b>	<b>3,904.24</b>

From the note it is quite clear that other expenses include manufacturing, selling, administrative and other expenses. The details are mentioned in the note. For example, Amara Raja Batteries Limited (ARBL) spent Rs.27.5 Crs on advertisement and promotional activities.

Adding up all the expenses mentioned in the expense side of P&L, it seems that Amara Raja Batteries has spent Rs.2941.6 Crs.

## 5.2 – The Profit before tax

It refers to the net operating income after deducting operating expenses but before deducting taxes and interest. Proceeding further on the P&L statement we can see that ARBL has mentioned their profit before tax and exceptional item numbers.

Simply put the profit before tax (PBT) is:

$$\text{Profit before Tax} = \text{Total Revenues} - \text{Total Operating Expenses}$$

$$= \text{Rs.}3482 - \text{Rs.}2941.6$$

$$=\text{Rs.}540.5$$

However there seems to be an exceptional item/ extraordinary item of Rs.3.8 Crs, which needs to be deducted. Exceptional items/ extraordinary items are expenses

occurring at one odd time for the company and the company does not foresee this as a recurring expense. Hence they treat it separately on the P&L statement.

Hence profit before tax and extraordinary items will be:

$$= 540.5 - 3.88$$

**= Rs.536.6 Crs**

The snapshot below (extract from P&L) shows the PBT(Profit Before Tax) of ARBL:

Profit before exceptional items and tax		5,405.54	4,309.74
Less: Exceptional items (net)	33	38.84	91.57
Profit before tax		5,366.70	4,218.17

### 5.3 – Net Profit after tax

The net operating profit after tax is defined as the company's operating profit after deducting its tax liability. We are now looking into the last part of the P&L statement, which is the profit after tax. This is also called the bottom line of the P&L statement.

Profit before tax		5,366.70	4,218.17
Less: Tax expense			
Current tax		1,580.00	1,377.97
Deferred tax (credit) / expense		106.23	(24.51)
Earlier year's (excess) / short provision		6.11	(2.34)
Profit for the year		3,674.36	2,867.05
Basic and diluted earnings per equity share of ₹1 each	37	21.51	16.78

As you can see from the snapshot above, to arrive at the profit after tax (PAT) we need to deduct all the applicable tax expenses from the PBT. Current tax is the corporate tax applicable for the given year. This stands at Rs.158 Crs. Besides this, there are other taxes that the company has paid. All taxes together total upto Rs.169.21 Crs. Deducting the tax amount from the PBT of Rs.536.6 gives us the profit after tax (PAT) at Rs.367.4 Crs.

Hence **Net PAT = PBT – Applicable taxes**.

The last line in the P&L statement talks about basic and diluted earnings per share. The EPS is one of the most frequently used statistics in financial analysis. EPS also serves as a means to assess the stewardship and management role performed by the company directors and managers. The earnings per share (EPS) is a very sacred number which indicates how much the company is earning per face value of the ordinary share. It appears that ARBL is earning Rs.21.51 per share. The detailed calculation is as shown below:

**NOTE 37: EARNINGS PER SHARE**

Particulars	Year ended March 31, 2014	Year ended March 31, 2013
<b>Numerator - Earnings</b>		
Net profits for the period in ₹ million	3,674.36	2,867.05
<b>Denominator - Equity shares</b>		
Number of shares at the beginning of the year	17,08,12,500	17,08,12,500
Add: Shares issued during the year	-	-
Less: Shares forfeited / bought back during the year	-	-
Number of shares outstanding at the end of the year	17,08,12,500	17,08,12,500
Weighted average number of shares outstanding at the end of the year (Basic and Diluted)	17,08,12,500	17,08,12,500
Basic and diluted earnings per equity share of ₹1 each	₹21.51	₹16.78

The company indicates that there are 17,08,12,500 shares outstanding in the market. Dividing the total profit after tax number by the outstanding number of shares, we can arrive at the earnings per share number. In this case:

Rs.367.4 Crs divided by 17,08,12,500 yields Rs.21.5 per share.

#### **5.4 – Conclusion**

Now that we have gone through all the line items in the P&L statement let us relook at it in its entirety.

Statement of Profit and LOSS for the year ended March 31, 2014		₹ million	
Particulars	Note No.	Year ended March 31, 2014	Year ended March 31, 2013
<b>REVENUE</b>			
Sale of products		38,041.27	32,949.37
Less: Excise duty		4,005.15	3,512.45
Net sale of products		34,036.12	29,436.92
Sale of services		309.32	137.02
Other operating revenue		21.15	15.21
Net revenue from operations	17	34,366.59	29,589.15
Other income	18	455.14	465.51
<b>Total Revenue</b>		<b>34,821.73</b>	<b>30,054.66</b>
<b>EXPENSES</b>			
Cost of materials consumed	19	21,011.95	17,603.12
Purchases of stock-in-trade	20	2,113.69	2,632.54
Changes in inventories of finished goods, work-in-process and stock-in-trade	20	(292.10)	(320.89)
Employee benefits expense	21	1,583.16	1,262.30
Finance costs	22	7.18	2.69
Depreciation and amortisation expense [includes impairment loss of ₹Nil (PY ₹75.52 million)]	23	645.71	660.92
Other expenses	24	4,346.60	3,904.24
<b>Total Expenses</b>		<b>29,416.19</b>	<b>25,744.92</b>
<b>Profit before exceptional items and tax</b>		<b>5,405.54</b>	<b>4,309.74</b>
Less: Exceptional items (net)	33	38.84	91.57
<b>Profit before tax</b>		<b>5,366.70</b>	<b>4,218.17</b>
Less: Tax expense			
Current tax		1,580.00	1,377.97
Deferred tax (credit) / expense		106.23	(24.51)
Earlier year's (excess) / short provision		6.11	(2.34)
<b>Profit for the year</b>		<b>3,674.36</b>	<b>2,867.05</b>
Basic and diluted earnings per equity share of ₹1 each	37	21.51	16.78

Hopefully, the statement above should look more meaningful to you by now. Remember almost all line items in the P&L statement will have an associated note. You can always look into the notes to seek greater clarity. Also at this stage we have just understood how to read the P&L statement, but we still need to analyze what the numbers mean. We will do this when we take up the financial ratios. Also, the P&L statement is very closely connected with the other two financial statements i.e the balance sheet and the cash flow statement. We will explore these connections at a later stage.

### Key takeaways from this chapter:

1. The expense part of the P&L statement contains information on all the expenses incurred by the company during the financial year
2. Each expense can be studied with reference to a note which you can explore for further information

3. Depreciation and amortization is way of spreading the cost of an asset over its useful life
4. Finance cost is the cost of interest and other charges paid when the company borrows money for its capital expenditure.
5. PBT = Total Revenue – Total Expense – Exceptional items (if any)
6. Net PAT = PBT – applicable taxes
7. EPS reflects the earning capacity of a company on a per share basis. Earnings are profit after tax and preferred dividends.
8. EPS = PAT / Total number of outstanding ordinary shares

# Understanding Balance Sheet Statement (Part 1)



## 6.1 – The balance sheet equation

While the P&L statement gives us information pertaining to the profitability of the company, the balance sheet gives us information pertaining to the assets, liabilities, and the shareholders equity. The P&L statement as you understood, discusses about the profitability for the financial year under consideration, hence it is good to say that the P&L statement is a standalone statement. The balance sheet however is prepared on a flow basis, meaning, it has financial information pertaining to the company right from the time it was incorporated. Thus while the P&L talks about how the company performed in a particular financial year; the balance sheet on the other hand discusses how the company has evolved financially over the years.

Have a look at the balance sheet of Amara Raja Batteries Limited (ARBL):

**Balance Sheet** as at March 31, 2014

Particulars	Note No.	₹ million	
		As at March 31, 2014	As at March 31, 2013
<b>EQUITY AND LIABILITIES</b>			
Shareholders' funds			
Share capital	2	170.81	170.81
Reserves and surplus	3	13,456.20	10,427.33
		13,627.01	10,598.14
Non-current liabilities			
Long-term borrowings	4	759.47	773.13
Deferred tax liabilities (net)	5	301.33	195.09
Long-term provisions	6	369.57	376.41
		1,430.37	1,344.63
Current liabilities			
Short-term borrowings	7	83.83	98.63
Trade payables	8	1,277.79	1,362.84
Other current liabilities	9	2,156.68	1,807.26
Short-term provisions	6	2,818.73	2,493.20
		6,337.03	5,761.93
<b>Total</b>		<b>21,394.41</b>	<b>17,704.70</b>
<b>ASSETS</b>			
Non-current assets			
Fixed assets	10		
Tangible assets		6,198.94	3,554.97
Intangible assets		32.96	33.69
Capital work-in-progress		1,443.60	1,024.97
Intangible assets under development		3.14	4.84
		7,678.64	4,618.47
Non-current investments	11	160.76	160.76
Long-term loans and advances	12	567.69	353.52
Other non-current assets	13	1.22	3.43
		8,408.31	5,136.18
Current assets			
Inventories	14	3,350.08	2,928.58
Trade receivables	15	4,527.89	3,806.77
Cash and bank balances	16	2,945.67	4,107.90
Short-term loans and advances	12	2,119.30	1,656.78
Other current assets	13	43.16	68.49
		12,986.10	12,568.52
<b>Total</b>		<b>21,394.41</b>	<b>17,704.70</b>
Significant accounting policies	1		

Statement on significant accounting policies and notes are an integral part of the financial statements

As you can see the balance sheet contains details about the assets, liabilities, and equity.

We had discussed about assets in the previous chapter. **Assets**, both tangible and intangible are owned by the company. An asset is a resource controlled by the company, and is expected to have an economic value in the future. Typical examples of assets include plants, machinery, cash, brands, patents etc. Assets are of two types, current and non-current, we will discuss these later in the chapter.

**Liability** on the other hand represents the company's obligation. The obligation is taken up by the company because the company believes these obligations will provide economic value in the long run. Liability in simple words is the loan that the company has taken and it is therefore obligated to repay back. Typical examples of obligation include short term borrowing, long term borrowing, payments due etc. Liabilities are of two types namely current and non-current. We will discuss about the kinds of liabilities later on in the chapter.

In any typical balance sheet, the total assets of company should be equal to the total liabilities of the company. Hence,

## Assets = Liabilities

The equation above is called the balance sheet equation or the accounting equation. In fact this equation depicts the key property of the balance sheet i.e the balance sheet should always be balanced. In other word the Assets of the company should be equal to the Liabilities of the company. This is because everything that a company owns (Assets) has to be purchased either from either the owner's capital or liabilities.

Owners Capital is the difference between the Assets and Liabilities. It is also called the 'Shareholders Equity' or the 'Net worth'. Representing this in the form of an equation :

## Share holders equity = Assets – Liabilities

### 6.2 –A quick note on shareholders' funds

As we know the balance sheet has two main sections i.e. the assets and the liabilities. The liabilities as you know represent the obligation of the company. The shareholders' fund, which is integral to the liabilities side of the balance sheet, is highlighted in the snapshot below. Many people find this term a little confusing.

Balance Sheet as at March 31, 2014		₹ million	
Particulars	Note No.	As at March 31, 2014	As at March 31, 2013
<strong>EQUITY AND LIABILITIES</strong>			
Shareholders' funds			
Share capital	2	170.81	170.81
Reserves and surplus	3	13,456.20	10,427.33
		13,627.01	10,598.14
Non-current liabilities			
Long-term borrowings	4	759.47	773.13
Deferred tax liabilities (net)	5	301.33	195.09
Long-term provisions	6	369.57	376.41
		1,430.37	1,344.63
Current liabilities			
Short-term borrowings	7	83.83	98.63
Trade payables	8	1,277.79	1,362.84
Other current liabilities	9	2,156.68	1,807.26
Short-term provisions	6	2,818.73	2,493.20
		6,337.03	5,761.93
Total		21,394.41	17,704.70

If you think about it, on one hand we are discussing about liabilities which represent the obligation of the company, and on the other hand we are discussing the shareholders' fund which represents the shareholders' wealth. This is quite counter intuitive isn't it? How can liabilities and shareholders' funds appear on the 'Liabilities' side of balance sheet? After all the shareholders funds represents the funds belonging to its shareholders' which in the true sense is an asset and not really a liability.

To make sense of this, you should change the perspective in which you look at a company's financial statement. Think about the entire company as an individual, whose sole job is run its core operation and to create wealth to its shareholders'. By thinking this way, you are in fact separating out the shareholders' (which also includes its promoters) and the company. With this new perspective, now think about the financial statement. You will appreciate that, the financial statements is a statement published by the company (which is an entity on its own) to communicate to the world about its financial well being.

This also means the shareholders' funds do not belong to the company as it rightfully belongs to the company's shareholders'. Hence from the company's perspective the shareholders' funds are an obligation payable to shareholders'. Hence this is shown on the liabilities side of the balance sheet.

### 6.3 -The liability side of balance sheet

The liabilities side of the balance sheet details out all the liabilities of the company. Within liabilities there are three sub sections – shareholders' fund, non-current liabilities, and current liabilities. The first section is the shareholders' funds.

Balance Sheet as at March 31, 2014			₹ million
Particulars	Note No.	As at March 31, 2014	As at March 31, 2013
<b>EQUITY AND LIABILITIES</b>			
Shareholders' funds			
Share capital	2	170.81	170.81
Reserves and surplus	3	13,456.20	10,427.33
		13,627.01	10,598.14

To understand share capital, think about a fictional company issuing shares for the first time. Imagine, Company ABC issues 1000 shares, with each share having a face value of Rs.10 each. The share capital in this case would be  $Rs.10 \times 1000 = Rs.10,000/-$  (Face value X number of shares).

In the case of ARBL, the share capital is Rs.17.081 Crs (as published in the Balance Sheet) and the Face Value is Rs.1/- . I got the FV value from the NSE's website:

## Amara Raja Batteries Limited

Series: EQ |

Symbol: AMARAJABAT ISIN: INE885A01032

Market Tracker

634.70	Pr. Close ▼ -4.05 -0.63%	Open 638.75	High 641.90	Low 624.05	Close -		
Trade Snapshot		Company Information		Peer Comparison		Historical Data	
VWAP 633.86		Print		Order Book	Intra-day Chart	Stock V/s Index Chart	Quarterly Charts
Face Value 1.00				Buy Qty.	Buy Price	Sell Price	Sell Qty.
Traded Volume (shares) 1,04,215				3	634.70	635.00	32
Traded Value (lacs) 660.58				25	633.20	635.30	50
Free Float Market Cap(Crs) 5,230.41				10	633.15	635.55	72
52 week high 674.95 (12-SEP-14)				10	633.10	635.60	15
52 week low 288.00 (01-OCT-13)				12	632.80	635.70	50
Adjusted 52 week high -				30,213	Total Quantity		35,663
Adjusted 52 week low -							
Lower Price Band 511.00							
Upper Price Band 766.50							
Note:							

+ Security-wise Delivery Position (19SEP2014)  
+ Value at Risk (VaR in %)

I can use the FV and share capital value to calculate the number of shares outstanding. We know:

$$\text{Share Capital} = \text{FV} * \text{Number of shares}$$

Therefore,

$$\text{Number of shares} = \text{Share Capital} / \text{FV}$$

Hence in case of ARBL,

$$\text{Number of shares} = 17,08,10,000 / 1$$

$$= 17,08,10,000 \text{ shares}$$

The next line item on the liability side of the Balance Sheet is the 'Reserves and Surplus'. Reserves are usually money earmarked by the company for specific purposes. Surplus is where all the profits of the company reside. The reserves and surplus for ARBL stands at Rs.1,345.6 Crs. The reserves and surplus have an associated note, numbered 3. Let us look into the same.

**NOTE 3: RESERVES AND SURPLUS**

₹ million

Particulars	As at March 31, 2014	As at March 31, 2013
Capital reserve	0.01	0.01
Securities premium account	311.86	311.86
General reserve		
As per last Balance Sheet	1,817.27	1,530.56
Add: Transfer from surplus in the Statement of Profit and Loss	367.44	286.71
	2,184.71	1,817.27
Surplus in the Statement of Profit and Loss		
As per last Balance Sheet	8,298.19	6,221.45
Add: Profit for the year	3,674.36	2,867.05
Amount available for appropriation	11,972.55	9,088.50
Less: Appropriations		
Transfer to general reserve	367.44	286.71
Proposed dividend	551.72	430.45
Dividend tax on proposed dividend	93.77	73.15
	10,959.62	8,298.19
Total	13,456.20	10,427.33

As you can notice from the note, the company has earmarked funds across three kinds of reserves:

- Capital reserves** – Usually earmarked for long term projects. Clearly ARBL does not have much amount here. This amount belongs to the shareholders, but cannot be distributed to them.
- Securities premium reserve / account** – This is where the premium over and above the face/par value of the shares sits. ARBL has a Rs.31.18 Crs under this reserve
- General reserve** – This is where all the accumulated profits of the company which is not yet distributed to the shareholder reside. The company can use the money here as a buffer. As you can see ARBL has Rs.218.4 Crs in general reserves.

The next section deals with the surplus. As mentioned earlier, surplus holds the profits made during the year. Couple of interesting things to note:

- As per the last year (FY13) balance sheet the surplus was Rs.829.8Crs. This is what is stated as the opening line under surplus. See the image below:

**NOTE 3: RESERVES AND SURPLUS**

₹ million

Particulars	As at March 31, 2014	As at March 31, 2013
Capital reserve	0.01	0.01
Securities premium account	311.86	311.86
General reserve		
As per last Balance Sheet	1,817.27	1,530.56
Add: Transfer from surplus in the Statement of Profit and Loss	367.44	286.71
	2,184.71	1,817.27
Surplus in the Statement of Profit and Loss		
As per last Balance Sheet	8,298.19	6,221.45
Add: Profit for the year	3,674.36	2,867.05
Amount available for appropriation	11,972.55	9,088.50
Less: Appropriations		
Transfer to general reserve	367.44	286.71
Proposed dividend	551.72	430.45
Dividend tax on proposed dividend	93.77	73.15
	10,959.62	8,298.19
Total	13,456.20	10,427.33

1. The current year (FY14) profit of Rs.367.4 Crs is added to previous years closing balance of surplus. Few things to take note here:
  1. Notice how the bottom line of P&L is interacting with the balance sheet. This highlights a very important fact – all the three financial statements are closely related
  2. Notice how the previous year balance sheet number is added up to this year's number. This highlights the fact that the balance sheet is prepared on a flow basis, adding the carrying forward numbers year on year
  2. Previous year's balance plus this year's profit adds up to Rs.1197.2 Crs. The company can choose to apportion this money for various purposes.
  1. The first thing a company does is it transfers some money from the surplus to general reserves so that it will come handy for future use. They have transferred close to Rs.36.7 Crs for this purpose
  2. After transferring to general reserves they have distributed Rs.55.1 Crs as dividends over which they have to pay Rs.9.3 Crs as dividend distribution taxes.
  3. After making the necessary apportionments the company has Rs.1095.9 Crs as surplus as closing balance. This as you may have guessed will be the opening balance for next year's (FY15) surplus account.
  4. Total Reserves and Surplus = Capital reserve + securities premium reserve + general reserves + surplus for the year. This stands at Rs.1345.6 Crs for the FY 14 against Rs.1042.7 Crs for the FY13

The total shareholders' fund is a sum of share capital and reserves & surplus. Since this amount on the liability side of the balance sheet represents the money belonging to shareholders', this is called the 'shareholders funds'.

## 6.4 – Non Current Liabilities

Non-current liabilities represent the long term obligations, which the company intends to settle/ pay off not within 365 days/ 12 months of the balance sheet date. These obligations stay on the books for few years. Non-current liabilities are generally settled after 12 months after the reporting period.

Here is the snapshot of the non-current liabilities of Amara Raja batteries Ltd.

Non-current liabilities				
Long-term borrowings	4	759.47	773.13	
Deferred tax liabilities (net)	5	301.33	195.09	
Long-term provisions	6	369.57	376.41	
		1,430.37		1,344.63

The company has three types of non-current liabilities; let us inspect each one of them.

**The long term borrowing** (associated with note 4) is the first line item within the non-current liabilities. Long term borrowing is one of the most important line item in the entire balance sheet as it represents the amount of money that the company has borrowed through various sources. Long term borrowing is also one of the key

inputs while calculating some of the financial ratios. Subsequently in this module we will look into the financial ratios.

Let us look into the note associated with 'Long term borrowings':

Particulars	₹ million			
	Non-current portion		Current maturities	
	As at March 31, 2014	As at March 31, 2013	As at March 31, 2014	As at March 31, 2013
Deferred payment liabilities				
Interest free sales tax deferment (Unsecured)	759.47	773.13	13.66	9.27
Total	759.47	773.13	13.66	9.27

#### Interest free sales tax deferment

The Company has availed interest free sales tax deferment under Andhra Pradesh sales tax deferment scheme (Target 2000) from the financial year 1997-98 as per the eligibility norms in respect of expanded capacities. The Company has availed total deferment of ₹811.40 million since March, 1998, which is repayable after a period of 14 years from the date of each availment in annual installments.

- Eligible amount of interest free sales tax deferment - ₹813.33 million
- Period eligible for availment - January 1998 till September 2015

From the note it is quite clear that the 'Long term borrowings' is in the form of 'interest free sales tax deferment'. To understand what interest free sales tax deferment really means, the company has explained just below the note (I have highlighted the same in a red box). It appears to be some sort of tax incentive from the state government. The company plans to settle this amount over a period of 14 years.

You will find that there are many companies which do not have long term borrowings (debt). While it is a good to know that the company has no debt, you must also question as to why there is no debt? Is it because the banks are refusing to lend to the company? or is it because the company is not taking initiatives to expand their business operations. Of course, we will deal with the analysis part of the balance sheet later in the module.

Do recollect, we looked at 'Finance Cost' as a line item when we looked at the P&L statement. If the debt of the company is high, then the finance cost will also be high.

The next line item within the non-current liability is '**Deferred Tax Liability**'. The deferred tax liability is basically a provision for future tax payments. The company foresees a situation where it may have to pay additional taxes in the future; hence they set aside some funds for this purpose. Why do you think the company would put itself in a situation where it has to pay more taxes for the current year at some point in the future?

Well this happens because of the difference in the way depreciation is treated as per Company's act and Income tax. We will not get into this aspect as we will digress from our objective of becoming users of financial statements. But do remember, deferred tax liability arises due to the treatment of depreciation.

The last line item within the non-current liability is the '**Long term provisions**'. Long term provisions are usually money set aside for employee benefits such as gratuity; leave encashment, provident funds etc.

## 6.5 – Current liabilities

Current liabilities are a company's obligations which are expected to be settled within 365 days (less than 1 year). The term 'Current' is used to indicate that the obligation is going to be settled soon, within a year. Going by that 'non-current' clearly means obligations that extend beyond 365 days.

Think about this way – if you buy a mobile phone on EMI (via a credit card) you obviously plan to repay your credit card company within a few months. This becomes your 'current liability'. However if you buy an apartment by seeking a 15 year home loan from a housing finance company, it becomes your 'non-current liability'.

Here is the snapshot of ARBL's current liabilities:

<b>Current liabilities</b>			
Short-term borrowings	7	83.83	98.63
Trade payables	8	1,277.79	1,362.84
Other current liabilities	9	2,156.68	1,807.26
Short-term provisions	6	2,818.73	2,493.20

As you can see there are 4 line items within the current liabilities. The first one is the short term borrowings. As the name suggests, these are short term obligations of the company usually undertaken by the company to meet day to day cash requirements (also called working capital requirements). Here is the extract of note 7, which details what short term borrowings mean:

<b>NOTE 7: SHORT-TERM BORROWINGS</b>		₹ million	
Particulars		As at March 31, 2014	As at March 31, 2013
Loans repayable on demand			
Cash credit from banks (Secured)			
State Bank of India		56.57	98.63
Andhra Bank		27.26	-
<b>Total</b>		<b>83.83</b>	<b>98.63</b>

The working capital facilities from State Bank of India, State Bank of Hyderabad, Andhra Bank and The Bank of Nova Scotia are secured by hypothecation of all current assets of the Company. The fixed assets of the Company are provided as collateral security by way of pari-passu second charge for the working capital facilities availed from State Bank of India.

Clearly as you can see, these are short term loans availed from the State bank of India and Andhra Bank towards meeting the working capital requirements. It is interesting to note that the short term borrowing is also kept at low level, at just Rs.8.3Crs.

The next line item is Trade Payable (also called account payable) which is at Rs.127.7 Crs. These are obligations payable to vendors who supply to the company. The vendors could be raw material suppliers, utility companies providing services, stationary companies etc. Have a look at note 8 which gives the details:

NOTE 8: TRADE PAYABLES		₹ million	
Particulars		As at March 31, 2014	As at March 31, 2013
(Unsecured)			
Trade payables			
i) Dues to Micro, Small and Medium Enterprises		4.87	7.17
ii) Others		1,272.92	1,355.67
<b>Total</b>		<b>1,277.79</b>	<b>1,362.84</b>

#### Notes relating to Micro, Small and Medium Enterprises

Based on, and to the extent of information received from the suppliers with regard to their status under Micro, Small and Medium Enterprises Development Act, 2006 (MSMED Act), on which the auditors have relied, the disclosure requirements of Schedule VI to the Companies Act, 1956 with regard to the payments made/due to Micro, Small and Medium Enterprises are given below:

The next line item just says 'Other current liabilities' which stands at Rs.215.6 Crs. Usually 'Other current Liabilities' are obligations associated with the statutory requirements and obligations that are not directly related to the operations of the company. Here is note 9 associated with 'Other current liabilities':

#### Notes forming part of the Financial Statements

NOTE 9: OTHER CURRENT LIABILITIES		₹ million	
Particulars		As at March 31, 2014	As at March 31, 2013
(Unsecured)			
Unclaimed dividends*		17.04	13.22
Other payables			
a) Employee related payables	370.12	311.60	
b) Outstanding liabilities	860.06	643.10	
c) Commission payable to Non-Executive Chairman	175.99	140.88	
d) Excise duty/Service tax payable	15.36	4.17	
e) Sales tax payables	169.88	200.39	
f) TDS/TCS payables	31.31	14.48	
g) Advances from customers	25.02	42.52	
h) Creditors for capital goods/services	176.30	214.15	
i) Other non-trade payables	301.94	2,125.98	213.48
<b>Sub-Total</b>		<b>2,143.02</b>	<b>1,797.99</b>
Add: Current maturities of long-term debt (Refer Note No. 4)			
Interest free sales tax deferment (Unsecured) repayable within 12 months		13.66	9.27
<b>Total</b>		<b>2,156.68</b>	<b>1,807.26</b>

\*The unclaimed dividends represent those relating to the years 2006-07 to 2012-13 (for previous year from 2005-06 to 2011-12) and no part thereof has remained unpaid or unclaimed for a period of seven years or more from the date they became due for payment requiring transfer to the Investor Education and Protection Fund.

The last line item in current liabilities is the 'Short term provisions' which stands at Rs.281.8 Crs. Short term provisions is quite similar to long term provisions, both of which deals with setting aside funds for employee benefits such as gratuity, leave encashment, provident funds etc. Interestingly the note associated with 'Short term Provisions' and the 'Long term provisions' is the same. Have a look at the following:

<b>Non-current liabilities</b>				
Long-term borrowings	<b>4</b>	759.47		773.13
Deferred tax liabilities (net)	<b>5</b>	301.33		195.09
Long-term provisions	<b>6</b>	369.57		376.41
			<b>1,430.37</b>	<b>1,344.63</b>
<b>Current liabilities</b>				
Short-term borrowings	<b>7</b>	83.83		98.63
Trade payables	<b>8</b>	1,277.79		1,362.84
Other current liabilities	<b>9</b>	2,156.68		1,807.26
Short-term provisions	<b>6</b>	2,818.73		2,493.20

Since note 6 is detailing both long and short term provisions it runs into several pages, hence for this reason I will not represent an extract of it. For those who are curious to look into the same can refer to pages 80, 81, 82 and 83 in the FY14 Annual report for Amara Raja Batteries Limited.

However, from the user of a financial statement perspective all you need to know is that these line items (short and long term provisions) deal with the employee and related benefits. Please note, one should always look at the associated note to run through the details.

We have now looked through half of the balance sheet which is broadly classified as the Liabilities side of the Balance sheet. Let us relook at the balance sheet once again to get a perspective:

**Balance Sheet** as at March 31, 2014

Particulars	Note No.	As at March 31, 2014	As at March 31, 2013	₹ million
<b>EQUITY AND LIABILITIES</b>				
Shareholders' funds				
Share capital	2	170.81	170.81	
Reserves and surplus	3	13,456.20	10,427.33	
		13,627.01		10,598.14
Non-current liabilities				
Long-term borrowings	4	759.47	773.13	
Deferred tax liabilities (net)	5	301.33	195.09	
Long-term provisions	6	369.57	376.41	
		1,430.37		1,344.63
Current liabilities				
Short-term borrowings	7	83.83	98.63	
Trade payables	8	1,277.79	1,362.84	
Other current liabilities	9	2,156.68	1,807.26	
Short-term provisions	6	2,818.73	2,493.20	
		6,337.03		5,761.93
<b>Total</b>		<b>21,394.41</b>		<b>17,704.70</b>
<b>ASSETS</b>				
Non-current assets				
Fixed assets	10			
Tangible assets		6,198.94	3,554.97	
Intangible assets		32.96	33.69	
Capital work-in-progress		1,443.60	1,024.97	
Intangible assets under development		3.14	4.84	
		7,678.64	4,618.47	
Non-current investments	11	160.76	160.76	
Long-term loans and advances	12	567.69	353.52	
Other non-current assets	13	1.22	3.43	
		8,408.31		5,136.18
Current assets				
Inventories	14	3,350.08	2,928.58	
Trade receivables	15	4,527.89	3,806.77	
Cash and bank balances	16	2,945.67	4,107.90	
Short-term loans and advances	12	2,119.30	1,656.78	
Other current assets	13	43.16	68.49	
		12,986.10		12,568.52
<b>Total</b>		<b>21,394.41</b>		<b>17,704.70</b>
Significant accounting policies	1			

Statement on significant accounting policies and notes are an integral part of the financial statements

Clearly,

**Total Liability = Shareholders' Funds + Non Current Liabilities + Current Liabilities**

$$= 1362.7 + 143.03 + 633.7$$

**Total Liability = Rs.2139.4 Crs**

## Key takeaways from this chapter

1. A Balance sheet also called the Statement of Financial Position is prepared on a flow basis which depicts the financial position of the company at any given point in time. It is a statement which shows what the company owns ( assets) and what the company owes (liabilities)
2. A business will generally need a balance sheet when it seeks investors, applies for loans, submits taxes etc.
3. Balance sheet equation is Assets = Liabilities + Shareholders' Equity
4. Liabilities are obligations or debts of a business from past transactions and Share capital is number of shares \* face value
5. Reserves are the funds earmarked for a specific purpose, which the company intends to use in future
6. Surplus is where the profits of the company reside. This is one of the points where the balance sheet and the P&L interact. Dividends are paid out of the surplus
7. Shareholders' equity = Share capital + Reserves + Surplus. Equity is the claim of the owners on the assets of the company. It represents the assets that remain after deducting the liabilities. If you rearrange the Balance Sheet equation, Equity = Assets – Liabilities.
8. Non-current liabilities or the long term liabilities are obligations which are expected to be settled in not less than 365 days or 12 months of the balance sheet date
9. Deferred tax liabilities arise due to the discrepancy in the way the depreciation is treated. Deferred tax liabilities are amounts of income taxes payable in the future with respect to taxable differences as per accounting books and tax books.
10. Current liabilities are the obligations the company plans to settle within 365 days /12 months of the balance sheet date.
11. In most cases both long and short term provisions are liabilities dealing with employee related matters
12. Total Liability = Shareholders' Funds + Non Current Liabilities + Current Liabilities. . Thus, total liabilities represent the total amount of money the company owes to others

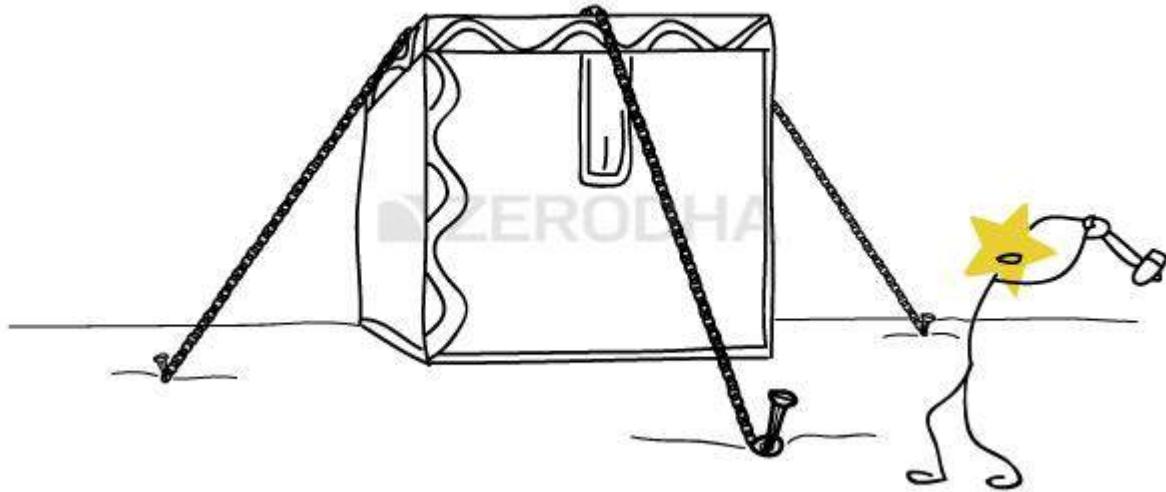
## Understanding the Balance Sheet Statement (Part 2)

### 7.1 – The Assets side of Balance Sheet

In the previous chapter we looked at the liability side of the balance sheet in detail. We will now proceed to understand the 2<sup>nd</sup> half of the balance sheet i.e the Asset side of the balance sheet. The Asset side shows us all the assets the company owns (in different forms) right from its inception. Assets in simple terms are the resources held by a company, which help in generating the revenues. Here is the snapshot of the Assets side of the balance sheet:

ASSETS				
Non-current assets				
Fixed assets	10			
Tangible assets		6,198.94		3,554.97
Intangible assets		32.96		33.69
Capital work-in-progress		1,443.60		1,024.97
Intangible assets under development		3.14		4.84
		7,678.64		4,618.47
Non-current investments	11	160.76		160.76
Long-term loans and advances	12	567.69		353.52
Other non-current assets	13	1.22		3.43
		8,408.31		5,136.18
Current assets				
Inventories	14	3,350.08		2,928.58
Trade receivables	15	4,527.89		3,806.77
Cash and bank balances	16	2,945.67		4,107.90
Short-term loans and advances	12	2,119.30		1,656.78
Other current assets	13	43.16		68.49
		12,986.10		12,568.52
<b>Total</b>		<b>21,394.41</b>		<b>17,704.70</b>

As you can see the Asset side has two main sections i.e Non-current assets and Current assets. Both these sections have several line items (with associated notes) included within. We will look into each one of these line items.



## 7.2 – Non-current assets (Fixed Assets)

Similar to what we learnt in the previous chapter, non-current assets talks about the assets that the company owns, the economic benefit of which is enjoyed over a long period (beyond 365 days). Remember an asset owned by a company is expected to give the company an economic benefit over its useful life.

If you notice within the non-current assets there is a subsection called “Fixed Assets” with many line items under it. Fixed assets are assets (both tangible and intangible) that the company owns which cannot be converted to cash easily or which cannot be liquidated easily. Typical examples of fixed assets are land, plant and machinery, vehicles, building etc. Intangible assets are also considered fixed assets because they benefit companies over a long period of time. If you see, all the line items within fixed assets have a common note, numbered 10, which we will explore in great detail shortly.

Here is the snapshot of fixed assets of Amara Raja Batteries Limited:

Fixed assets	10		
Tangible assets	6,198.94	3,554.97	
Intangible assets	32.96	33.69	
Capital work-in-progress	1,443.60	1,024.97	
Intangible assets under development	3.14	4.84	
	7,678.64	4,618.47	

The first line item ‘Tangible Assets’ is valued at Rs.619.8Crs. Tangible assets consists of assets which has a physical form. In other words these assets can be seen or touched. This usually includes plant and machinery, vehicles, buildings, fixtures etc.

Likewise the next line item reports the value of Intangible assets valued at Rs.3.2 Crs. Intangible assets are assets which have an economic value, but do not have a physical nature. This usually includes patents, copyrights, trademarks, designs etc.

Remember when we discussed the P&L statement we discussed depreciation. Depreciation is a way of spreading the cost of acquiring the asset over its useful life. The value of the assets deplete over time, as the assets lose their productive capacity due to obsolescence and physical wear and tear. This value is called the Depreciation expense, which is shown in the Profit and Loss account and the Balance Sheet.

All the assets should be depreciated over its useful life. Keeping this in perspective, when the company acquires an asset it is called the 'Gross Block'. Depreciation should be deducted from the Gross block, after which we can arrive at the 'Net Block'.

### Net Block = Gross Block -Accumulated Depreciation

Note, the term 'Accumulated' is used to indicate all the depreciation value since the incorporation of the company.

When we read tangible assets at Rs.619.8 Crs and Intangible assets at Rs.3.2 Crs, do remember the company is reporting its Net block, which is Net of Accumulated depreciation. Have a look at the Note 10, which is associated with fixed assets.

**NOTE 10: FIXED ASSETS & DEPRECIATION**

Particulars	GROSS BLOCK			DEPRECIATION / AMORTISATION				IMPAIRMENT				NET BLOCK		
	As at March 31, 2013	Additions during the year	Deductions during the year	As at March 31, 2014	Upto March 31, 2013	For the year	On Deductions	Upto March 31, 2014	Upto March 31, 2013	For the year	On Deductions	Upto March 31, 2014	As at March 31, 2014	As at March 31, 2013
<b>A. Tangible assets</b>														
Land and land development														
Freehold land	170.17	-	-	170.17	-	-	-	3.06	75.52	-	-	75.52	94.65	94.65
- Leasehold land*	133.65	267.86	-	401.51	0.84	2.22	-	-	-	-	-	-	398.45	132.81
Buildings	934.48	858.44	6.68	1,786.24	172.70	28.42	3.76	197.36	-	-	-	-	1,588.88	761.78
R&D buildings	9.90	9.03	-	18.93	4.59	0.48	-	5.07	-	-	-	-	13.86	5.31
Plant & machinery	4,549.43	1,950.56	121.13	6,378.86	2,527.37	522.95	105.11	2,945.21	-	-	-	-	3,433.65	2,022.06
R&D plant & machinery	118.84	36.85	9.75	145.94	81.90	12.84	8.95	85.79	-	-	-	-	60.15	36.94
Electrical installations	468.15	58.55	4.52	522.18	153.50	31.08	4.24	180.34	-	-	-	-	341.84	314.65
Furniture	79.25	21.56	0.002	100.81	42.45	4.87	0.002	47.32	-	-	-	-	53.49	36.80
Vehicles	105.50	37.65	12.54	130.61	33.81	9.73	10.07	33.47	-	-	-	-	97.14	71.69
Office equipment	181.06	63.16	6.71	237.51	102.78	24.09	6.19	120.68	-	-	-	-	116.83	78.28
Total	6,750.43	3,303.66	161.33	9,892.76	3,119.94	636.68	138.32	3,618.30	75.52	-	-	75.52	6,198.94	3,554.97
Previous year	6,181.26	724.78	155.61	6,750.43	2,656.46	578.04	114.56	3,119.94	-	75.52	-	75.52	3,554.97	3,524.80
<b>B. Intangible assets</b>														
Brands/trademarks	0.12	-	-	0.12	0.12	-	-	0.12	-	-	-	-	-	-
Computer software	52.08	10.30	-	62.38	18.39	11.04	-	29.43	-	-	-	-	32.86	33.69
Total	52.20	10.30	-	62.50	18.51	11.04	-	29.55	-	-	-	-	32.96	33.69
Previous year	31.23	20.97	-	52.20	10.31	8.20	-	18.51	-	-	-	-	33.69	20.92
Grand Total (A+B)	6,802.63	3,313.96	161.33	9,955.26	3,138.45	647.72	138.32	3,647.85	75.52	-	-	75.52	6,231.90	3,588.66
Previous year	6,212.49	745.75	155.61	6,802.63	2,666.77	586.24	114.56	3,138.45	-	75.52	-	75.52	3,588.66	3,545.72
<b>C. Capital work-in-progress</b>														1,443.60
<b>D. Intangible assets under development</b>														3.14
														4.84

\*Leasehold land represents one time lease rental paid for 99 years. Amortisation of leasehold land rent of ₹2.85 million is capitalized/included in capital work-in-progress as part of pre-operative expenses.

At the top of the note you can see the Gross Block, Depreciation/amortization, and Net block being highlighted. I have also highlighted two net block numbers which tallies with what was mentioned in the balance sheet.

Let us look at a few more interesting aspects on this note. Notice under Tangible assets you can see the list of all the assets the company owns.

**NOTE 10: FIXED ASSETS & DEPRECIATION**

₹ million

Particulars	GROSS BLOCK			DEPRECIATION / AMORTISATION				IMPAIRMENT			NET BLOCK		
	As at March 31, 2013	Additions during the year	Deductions during the year	As at March 31, 2014	Upto March 31, 2013	For the year	On Deductions	Upto March 31, 2014	Upto March 31, 2013	For the year	On Deductions	Upto March 31, 2014	As at March 31, 2013
<b>A. Tangible assets</b>													
Land and land development													
Freehold land	170.17	-	-	170.17	-	-	-	75.52	-	-	75.52	94.65	94.65
Leasehold land*	133.65	267.85	-	401.51	0.84	2.22	3.06	-	-	-	-	398.45	132.81
Buildings	934.48	858.44	6.68	1,786.24	172.70	28.42	3.76	197.36	-	-	-	1,588.88	761.78
R&D buildings	9.90	9.03	-	18.93	4.59	0.48	-	5.07	-	-	-	13.86	5.31
Plant & machinery	4,549.43	1,950.56	121.13	6,378.86	2,527.37	522.95	105.11	2,945.21	-	-	-	3,433.65	2,022.06
R&D plant & machinery	118.84	36.85	9.75	145.94	81.90	12.84	8.95	85.79	-	-	-	60.15	36.94
Electrical installations	468.15	58.55	4.52	522.18	153.50	31.08	4.24	180.34	-	-	-	341.84	314.65
Furniture	79.25	21.56	0.002	100.81	42.45	4.87	0.002	47.32	-	-	-	53.49	36.80
Vehicles	105.50	37.65	12.54	130.61	33.81	9.73	10.07	33.47	-	-	-	97.14	71.69
Office equipment	181.06	63.16	6.71	237.51	102.78	24.09	6.19	120.68	-	-	-	116.83	78.28
<b>Total</b>	<b>6,750.43</b>	<b>3,303.66</b>	<b>161.33</b>	<b>9,892.76</b>	<b>3,119.94</b>	<b>636.68</b>	<b>138.32</b>	<b>3,618.30</b>	<b>75.52</b>	<b>-</b>	<b>-</b>	<b>75.52</b>	<b>6,198.94</b>
<b>Previous year</b>	<b>6,181.26</b>	<b>724.78</b>	<b>155.61</b>	<b>6,750.43</b>	<b>2,656.46</b>	<b>578.04</b>	<b>114.56</b>	<b>3,119.94</b>	<b>-</b>	<b>75.52</b>	<b>-</b>	<b>75.52</b>	<b>3,554.97</b>
<b>B. Intangible assets</b>													
Brands/trademarks	0.12	-	-	0.12	0.12	-	-	0.12	-	-	-	-	-
Computer software	52.08	10.30	-	62.38	18.39	11.04	-	29.43	-	-	-	32.96	33.69
<b>Total</b>	<b>52.20</b>	<b>10.30</b>	<b>-</b>	<b>62.50</b>	<b>18.51</b>	<b>11.04</b>	<b>-</b>	<b>29.55</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>32.96</b>	<b>33.69</b>
<b>Previous year</b>	<b>31.23</b>	<b>20.97</b>	<b>-</b>	<b>52.20</b>	<b>10.31</b>	<b>8.20</b>	<b>-</b>	<b>18.51</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>33.69</b>	<b>20.97</b>
<b>Grand Total (A+B)</b>	<b>6,802.63</b>	<b>3,313.96</b>	<b>161.33</b>	<b>9,955.26</b>	<b>3,138.45</b>	<b>647.72</b>	<b>138.32</b>	<b>3,647.85</b>	<b>75.52</b>	<b>-</b>	<b>-</b>	<b>75.52</b>	<b>6,231.90</b>
<b>Previous year</b>	<b>6,212.49</b>	<b>745.75</b>	<b>155.61</b>	<b>6,802.63</b>	<b>2,666.77</b>	<b>586.24</b>	<b>114.56</b>	<b>3,138.45</b>	<b>-</b>	<b>75.52</b>	<b>-</b>	<b>75.52</b>	<b>3,588.66</b>
<b>C. Capital work-in-progress</b>													
<b>D. Intangible assets under development</b>													

\*Leasehold land represents one time lease rental paid for 99 years. Amortization of leasehold land rent of ₹2.85 million is capitalized/included in capital work-in-progress as part of pre-operative expenses.

For example, the company has listed 'Buildings' as one of its tangible asset. I have highlighted this part:-

**NOTE 10: FIXED ASSETS & DEPRECIATION**

₹ million

Particulars	GROSS BLOCK			DEPRECIATION / AMORTISATION				IMPAIRMENT			NET BLOCK		
	As at March 31, 2013	Additions during the year	Deductions during the year	As at March 31, 2014	Upto March 31, 2013	For the year	On Deductions	Upto March 31, 2014	Upto March 31, 2013	For the year	On Deductions	Upto March 31, 2014	As at March 31, 2013
<b>A. Tangible assets</b>													
Land and land development													
Freehold land	170.17	-	-	170.17	-	-	-	75.52	-	-	75.52	94.65	94.65
Leasehold land*	133.65	267.85	-	401.51	0.84	2.22	3.06	-	-	-	-	398.45	132.81
Buildings	934.48	858.44	6.68	1,786.24	172.70	28.42	3.76	197.36	-	-	-	1,588.88	761.78
R&D buildings	9.90	9.03	-	18.93	4.59	0.48	-	5.07	-	-	-	13.86	5.31
Plant & machinery	4,549.43	1,950.56	121.13	6,378.86	2,527.37	522.95	105.11	2,945.21	-	-	-	3,433.65	2,022.06
R&D plant & machinery	118.84	36.85	9.75	145.94	81.90	12.84	8.95	85.79	-	-	-	60.15	36.94
Electrical installations	468.15	58.55	4.52	522.18	153.50	31.08	4.24	180.34	-	-	-	341.84	314.65
Furniture	79.25	21.56	0.002	100.81	42.45	4.87	0.002	47.32	-	-	-	53.49	36.80
Vehicles	105.50	37.65	12.54	130.61	33.81	9.73	10.07	33.47	-	-	-	97.14	71.69
Office equipment	181.06	63.16	6.71	237.51	102.78	24.09	6.19	120.68	-	-	-	116.83	78.28
<b>Total</b>	<b>6,750.43</b>	<b>3,303.66</b>	<b>161.33</b>	<b>9,892.76</b>	<b>3,119.94</b>	<b>636.68</b>	<b>138.32</b>	<b>3,618.30</b>	<b>75.52</b>	<b>-</b>	<b>-</b>	<b>75.52</b>	<b>6,198.94</b>
<b>Previous year</b>	<b>6,181.26</b>	<b>724.78</b>	<b>155.61</b>	<b>6,750.43</b>	<b>2,656.46</b>	<b>578.04</b>	<b>114.56</b>	<b>3,119.94</b>	<b>-</b>	<b>75.52</b>	<b>-</b>	<b>75.52</b>	<b>3,554.97</b>
<b>B. Intangible assets</b>													
Brands/trademarks	0.12	-	-	0.12	0.12	-	-	0.12	-	-	-	-	-
Computer software	52.08	10.30	-	62.38	18.39	11.04	-	29.43	-	-	-	32.96	33.69
<b>Total</b>	<b>52.20</b>	<b>10.30</b>	<b>-</b>	<b>62.50</b>	<b>18.51</b>	<b>11.04</b>	<b>-</b>	<b>29.55</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>32.96</b>	<b>33.69</b>
<b>Previous year</b>	<b>31.23</b>	<b>20.97</b>	<b>-</b>	<b>52.20</b>	<b>10.31</b>	<b>8.20</b>	<b>-</b>	<b>18.51</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>33.69</b>	<b>20.97</b>
<b>Grand Total (A+B)</b>	<b>6,802.63</b>	<b>3,313.96</b>	<b>161.33</b>	<b>9,955.26</b>	<b>3,138.45</b>	<b>647.72</b>	<b>138.32</b>	<b>3,647.85</b>	<b>75.52</b>	<b>-</b>	<b>-</b>	<b>75.52</b>	<b>6,231.90</b>
<b>Previous year</b>	<b>6,212.49</b>	<b>745.75</b>	<b>155.61</b>	<b>6,802.63</b>	<b>2,666.77</b>	<b>586.24</b>	<b>114.56</b>	<b>3,138.45</b>	<b>-</b>	<b>75.52</b>	<b>-</b>	<b>75.52</b>	<b>3,588.66</b>
<b>C. Capital work-in-progress</b>													
<b>D. Intangible assets under development</b>													

\*Leasehold land represents one time lease rental paid for 99 years. Amortization of leasehold land rent of ₹2.85 million is capitalized/included in capital work-in-progress as part of pre-operative expenses.

As of 31<sup>st</sup> March 2013 (FY13) ARBL reported the value of the building at Rs.93.4 Crs. During the FY14 the company added Rs.85.8Crs worth of building, this amount is classified as 'additions during the year'. Further they also wound up 0.668 Crs worth of building; this amount is classified as 'deductions during the year'. Hence the current year value of the building would be:

Previous year's value of building + addition during this year - deduction during the year

$$93.4 + 85.8 - 0.668$$

$$= 178.5 \text{ Crs}$$

You can notice this number being highlighted in blue in the above image. Do remember this is the gross block of the building. From the gross block one needs to deduct the accumulated depreciation to arrive at the 'Net Block'. In the snapshot below, I have highlighted the depreciation section belonging to the 'Building'.

**NOTE 10: FIXED ASSETS & DEPRECIATION**

Particulars	GROSS BLOCK				DEPRECIATION / AMORTISATION				IMPAIRMENT				NET BLOCK		
	As at March 31, 2013	Additions during the year	Deductions during the year	As at March 31, 2014	Upto March 31, 2013	For the year	On Deductions	Upto March 31, 2014	Upto March 31, 2013	For the year	On Deductions	Upto March 31, 2014	As at March 31, 2014	As at March 31, 2013	
<b>A. Tangible assets</b>															
Land and land development															
- Freehold land	170.17	-	-	170.17	-	-	-	-	75.52	-	-	75.52	94.65	94.65	
- Leasehold land*	133.65	267.86	-	401.51	0.84	2.22	3.06	-	-	-	-	-	398.45	132.81	
<b>Buildings</b>	<b>934.48</b>	<b>858.44</b>	<b>6.68</b>	<b>1,786.24</b>	<b>172.70</b>	<b>28.42</b>	<b>3.76</b>	<b>197.36</b>	-	-	-	-	<b>1,588.88</b>	<b>761.78</b>	
R&D buildings	9.90	9.03	-	18.93	4.59	0.48	-	5.07	-	-	-	-	13.86	5.31	
Plant & machinery	4,549.43	1,950.56	121.13	6,378.86	2,527.37	522.95	105.11	2,945.21	-	-	-	-	3,433.65	2,022.06	
R&D plant & machinery	118.84	36.85	9.75	145.94	81.90	12.84	8.95	85.79	-	-	-	-	60.15	36.94	
Electrical installations	468.15	58.55	4.52	522.18	153.50	31.08	4.24	180.34	-	-	-	-	341.84	314.65	
Furniture	79.25	21.56	0.002	100.81	42.45	4.87	0.002	47.32	-	-	-	-	53.49	36.80	
Vehicles	105.50	37.65	12.54	130.61	33.81	9.73	10.07	33.47	-	-	-	-	97.14	71.69	
Office equipment	181.06	63.16	6.71	237.51	102.78	24.09	6.19	120.68	-	-	-	-	116.83	78.28	
<b>Total</b>	<b>6,750.43</b>	<b>3,303.66</b>	<b>161.33</b>	<b>9,892.76</b>	<b>3,119.94</b>	<b>636.68</b>	<b>138.32</b>	<b>3,618.30</b>	<b>75.52</b>	<b>-</b>	<b>-</b>	<b>75.52</b>	<b>6,198.94</b>	<b>3,554.97</b>	
<b>Previous year</b>	<b>6,181.26</b>	<b>724.78</b>	<b>155.61</b>	<b>6,750.43</b>	<b>2,656.46</b>	<b>578.04</b>	<b>114.56</b>	<b>3,119.94</b>	-	<b>75.52</b>	-	<b>75.52</b>	<b>3,554.97</b>	<b>3,524.80</b>	
<b>B. Intangible assets:</b>															
Brands/trademarks	0.12	-	-	0.12	0.12	-	-	0.12	-	-	-	-	-	-	
Computer software	52.08	10.30	-	62.38	18.39	11.04	-	29.43	-	-	-	-	32.96	33.69	
<b>Total</b>	<b>52.20</b>	<b>10.30</b>	<b>-</b>	<b>62.50</b>	<b>18.51</b>	<b>11.04</b>	<b>-</b>	<b>29.55</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>32.96</b>	<b>33.69</b>	
<b>Previous year</b>	<b>31.23</b>	<b>20.97</b>	<b>-</b>	<b>52.20</b>	<b>10.31</b>	<b>8.20</b>	<b>-</b>	<b>18.51</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>33.69</b>	<b>20.97</b>	
<b>Grand Total (A+B)</b>	<b>6,802.63</b>	<b>3,313.96</b>	<b>161.33</b>	<b>9,955.26</b>	<b>3,138.45</b>	<b>647.72</b>	<b>138.32</b>	<b>3,647.85</b>	<b>75.52</b>	<b>-</b>	<b>-</b>	<b>75.52</b>	<b>6,231.90</b>	<b>3,588.66</b>	
<b>Previous year</b>	<b>6,212.49</b>	<b>745.75</b>	<b>155.61</b>	<b>6,802.63</b>	<b>2,666.77</b>	<b>586.24</b>	<b>114.56</b>	<b>3,138.45</b>	-	<b>75.52</b>	-	<b>75.52</b>	<b>3,588.66</b>	<b>3,545.72</b>	
<b>C. Capital work-in-progress</b>														<b>1,443.60</b>	<b>1,024.97</b>
<b>D. Intangible assets under development</b>														<b>3.14</b>	<b>4.84</b>

\*Leasehold land represents one time lease rental paid for 99 years. Amortisation of leasehold land rent of ₹2.85 million is capitalised/included in capital work-in-progress as part of pre-operative expenses.

As of 31<sup>st</sup> March 2013 (FY13) ARBL has depreciated Rs.17.2 Crs, to which they need to add Rs.2.8 Crs belonging to the year FY14, adjust 0.376 Crs as the deduction for the year. Thus, the Total Depreciation for the year is:-

Previous year's depreciation value + Current year's depreciation - Deduction for the year

$$= 17.2 + 2.8 - 0.376$$

Total Depreciation= Rs.19.736 Crs. This is highlighted in red in the image above.

So, we have building gross block at Rs.178.6 Crs and depreciation at Rs.19.73 Crs which gives us a net block of Rs.158.8 Crs ( 178.6– 19.73). The same has been highlighted in the image below:

**NOTE 10: FIXED ASSETS & DEPRECIATION**

₹ million

Particulars	GROSS BLOCK			DEPRECIATION / AMORTISATION				IMPAIRMENT			NET BLOCK				
	As at March 31, 2013	Additions during the year	Deductions during the year	As at March 31, 2014	Upto March 31, 2013	For the year	On Deductions	Upto March 31, 2014	Upto March 31, 2013	For the year	On Deductions	Upto March 31, 2014	As at March 31, 2014	As at March 31, 2013	
<b>A. Tangible assets</b>															
Land and land development															
- Freehold land	170.17	-	-	170.17	-	-	-	75.52	-	-	75.52	94.65	94.65		
- Leasehold land*	133.65	267.86	-	401.51	0.84	2.22	3.06	-	-	-	-	398.45	132.81		
<b>Buildings</b>	<b>934.48</b>	<b>858.44</b>	<b>6.68</b>	<b>1,786.24</b>	<b>172.70</b>	<b>28.42</b>	<b>3.76</b>	<b>197.36</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1,588.88</b>	<b>761.78</b>		
R&D buildings	9.90	9.03	-	18.93	4.59	0.48	-	5.07	-	-	-	13.86	5.31		
<b>Plant &amp; machinery</b>	<b>4,549.43</b>	<b>1,950.56</b>	<b>121.13</b>	<b>6,378.86</b>	<b>2,527.37</b>	<b>522.95</b>	<b>105.11</b>	<b>2,945.21</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3,433.65</b>	<b>2,022.06</b>		
R&D plant & machinery	118.84	36.85	9.75	145.94	81.90	12.84	8.95	85.79	-	-	-	60.15	36.94		
Electrical installations	468.15	58.55	4.52	522.18	153.50	31.08	4.24	180.34	-	-	-	341.84	314.65		
Furniture	79.25	21.56	0.002	100.81	42.45	4.87	0.002	47.32	-	-	-	53.49	36.80		
Vehicles	105.50	37.65	12.54	130.61	33.81	9.73	10.07	33.47	-	-	-	97.14	71.69		
Office equipment	181.06	63.16	6.71	237.51	102.78	24.09	6.19	120.68	-	-	-	116.83	78.28		
<b>Total</b>	<b>6,750.43</b>	<b>3,303.66</b>	<b>161.33</b>	<b>9,892.76</b>	<b>3,119.94</b>	<b>636.68</b>	<b>138.32</b>	<b>3,618.30</b>	<b>75.52</b>	<b>-</b>	<b>-</b>	<b>75.52</b>	<b>6,198.94</b>	<b>3,554.97</b>	
Previous year	6,181.26	724.78	155.61	6,750.43	2,656.46	578.04	114.56	3,119.94	-	75.52	-	75.52	3,554.97	3,524.80	
<b>B. Intangible assets</b>															
Brands/trademarks	0.12	-	-	0.12	0.12	-	-	0.12	-	-	-	-	-	-	
Computer software	52.08	10.30	-	62.38	18.39	11.04	-	29.43	-	-	-	32.96	33.69		
<b>Total</b>	<b>52.20</b>	<b>10.30</b>	<b>-</b>	<b>62.50</b>	<b>18.51</b>	<b>11.04</b>	<b>-</b>	<b>29.55</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>32.96</b>	<b>33.69</b>		
Previous year	31.23	20.97	-	52.20	10.31	8.20	-	18.51	-	-	-	33.69	20.97		
<b>Grand Total (A+B)</b>	<b>6,802.63</b>	<b>3,313.96</b>	<b>161.33</b>	<b>9,955.26</b>	<b>3,138.45</b>	<b>647.72</b>	<b>138.32</b>	<b>3,647.85</b>	<b>75.52</b>	<b>-</b>	<b>-</b>	<b>75.52</b>	<b>6,231.90</b>	<b>3,588.66</b>	
Previous year	6,212.49	745.75	155.61	6,802.63	2,666.77	586.24	114.56	3,138.45	-	75.52	-	75.52	3,588.66	3,545.72	
<b>C. Capital work-in-progress</b>														1,443.60	1,024.97
<b>D. Intangible assets under development</b>														3.14	4.84

\*Leasehold land represents one time lease rental paid for 99 years. Amortisation of leasehold land rent of ₹2.85 million is capitalised/included in capital work-in-progress as part of pre-operative expenses.

The same exercise is carried out for all the other tangible and intangible assets to arrive at the Total Net block number.

The next two line items under the fixed assets are Capital work in progress (CWIP) and Intangible assets under development.

CWIP includes building under construction, machinery under assembly etc at the time of preparing the balance sheet. Hence it is aptly called the "Capital Work in Progress". This amount is usually mentioned in the Net block section. CWIP is the work that is not yet complete but where a capital expenditure has already been incurred. As we can see, ARBL has Rs.144.3 Crs under CWIP. Once the construction process is done and the asset is put to use, the asset is moved to tangible assets (under fixed assets) from CWIP.

The last line item is 'Intangible assets under development'. This is similar to CWIP but for intangible assets. The work in process could be patent filing, copyright filing, brand development etc. This is at a minuscule cost of 0.3 Crs for ARBL. All these costs are added to arrive at the total fixed cost of the company.

### 7.3 – Non-current assets (Other line items)

Besides the fixed assets under the non-current assets, there are other line items as well. Here is a snapshot for the same:

Non-current investments	11	160.76	160.76
Long-term loans and advances	12	567.69	353.52
Other non-current assets	13	1.22	3.43

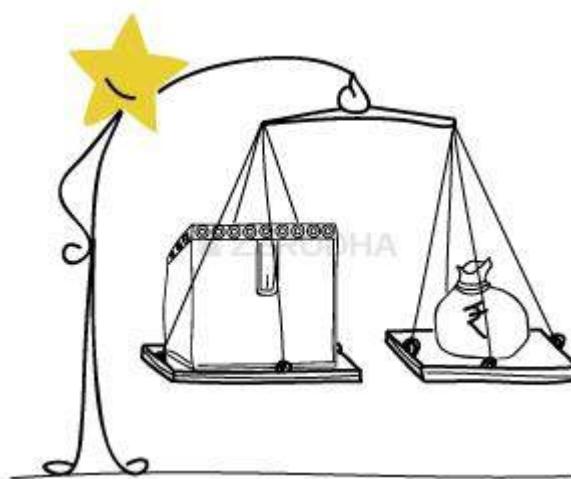
Non-current investments are investments made by ARBL with a long term perspective. This stands at Rs.16.07 Crs. The investment could be anything – buying

listed equity shares, minority stake in other companies, debentures, mutual funds etc. Here is the partial (as I could not fit the entire image) snapshot of Note 11. This should give you a perspective.

NOTE 11: NON-CURRENT INVESTMENTS		₹ million	
Particulars		As at March 31, 2014	As at March 31, 2013
A. In Equity Instruments			
a. Quoted - Non trade at cost			
i) 125 Fully paid up equity shares of ₹1 each in Standard Batteries Limited	0.01	0.01	
Less: Provision for diminution in value	0.01	0.01	
	-	-	
ii) 25 Fully paid up equity shares of ₹2 each in Nicco Corporation Limited	0.001	0.001	
iii) 10,000 Fully paid up equity shares of ₹1 each in Exide Industries Limited	0.04	0.04	
iv) 5,500 Fully paid up equity shares of ₹1 each in HBL Power Systems Limited	0.01	0.01	
v) 160,000 Fully paid up equity shares of ₹2 each in IVRCL Limited	0.21	0.21	
vi) 23,749 Fully paid up equity shares of ₹10 each in IDBI Bank Limited	1.01	1.01	
vii) 227,900 Fully paid up equity shares of ₹10 each in Andhra Bank	2.28	3.55	2.28
			3.55
b. Unquoted - Non trade at Cost			
i) 1,128 Fully paid up equity shares of ₹10 each in Indian Lead Limited	0.03	0.03	
Less: Provision for diminution in value	0.03	-	0.03
c. Unquoted - Trade at Cost			
i) 1,206,000 Fully paid up equity shares of ₹10 each in Andhra Pradesh Gas Power Corporation Limited	157.14		157.14
B. In Government Securities - Non trade at Cost			
a) 6 years National Savings Certificates (Lodged as security with Government departments.)			

The next line item is long term loans and advances which stand at Rs.56.7Crs. These are loans and advances given out by the company to other group companies, employees, suppliers, vendors etc.

The last line item under the Non-current assets is 'Other Non-current assets' which is at Rs. 0.122 Crs. This includes other miscellaneous long term assets.



## 7.4 – Current assets

Current assets are assets that can be easily converted to cash and the company foresees a situation of consuming these assets within 365 days. Current assets are the assets that a company uses to fund its day to day operations and ongoing expenses.

The most common current assets are cash and cash equivalents, inventories, receivables, short term loans and advances and sundry debtors.

Here is the snapshot of the current assets of ARBL:

Current assets				
Inventories	14	3,350.08		2,928.58
Trade receivables	15	4,527.89		3,806.77
Cash and bank balances	16	2,945.67		4,107.90
Short-term loans and advances	12	2,119.30		1,656.78
Other current assets	13	43.16		68.49

The first line item on the Current assets is Inventory which stands at Rs.335.0 Crs. Inventory includes all the finished goods manufactured by the company, raw materials in stock, goods that are manufactured incompletely etc. Inventories are goods at various stages of production and hence have not been sold. When any product is manufactured in a company it goes through various processes from raw material, to work in progress to a finished good. Snapshot of Note 14 associated with inventory of the company is as shown below:

NOTE 14: INVENTORIES		₹ million	
Particulars		As at March 31, 2014	As at March 31, 2013
(Valued at lower of cost or net realisable value)			
Raw materials	826.36		666.18
Add: Raw materials in transit	120.73		264.64
Total Raw materials		947.09	930.82
Work-in-process		1,052.11	828.95
Finished goods		941.75	536.44
Stock-in-trade		74.56	368.98
Stores and spares		323.27	255.22
Loose tools		6.07	4.39
Secondary packing materials and others		5.23	3.78
<b>Total</b>		<b>3,350.08</b>	<b>2,928.58</b>

As you can see, a bulk of the inventory value comes from 'Raw material' and 'Work-in- progress'.

The next line item is 'Trade Receivables' also referred to as 'Accounts Receivables'. This represents the amount of money that the company is expected to receive from its distributors, customers and other related parties. The trade receivable for ARBL stands at Rs.452.7 Crs.

The next line item is the Cash and Cash equivalents, which are considered the most liquid assets found in the Balance sheet of any company. Cash comprises of cash on

hand and cash on demand. Cash equivalents are short term, highly liquid investments which has a maturity date of less than three months from its acquisition date. This stands at Rs.294.5 Crs. Note 16 associated with Cash and bank balances is as shown below. As you can see the company has cash parked in various types of accounts.

**NOTE 16: CASH AND BANK BALANCES**

Particulars	₹ million	
	As at March 31, 2014	As at March 31, 2013
a) Cash and cash equivalents		
i) Balances with banks		
in current accounts	156.95	238.37
in deposit accounts	2,445.79	3,652.00
in exchange earner's foreign currency account	56.65	30.23
ii) Cheques/drafts on hand	268.15	172.61
iii) Cash on hand	1.09	2,928.63
b) Other bank balances in earmarked accounts		
Unclaimed dividends	17.04	13.22
<b>Total</b>	<b>2,945.67</b>	<b>4,107.90</b>

The next line item is short-term loans and advances, that the company has tendered and which is expected to be repaid back to the company within 365 days. It includes various items such as advances to suppliers, loans to customers, loans to employees, advance tax payments (income tax, wealth tax) etc. This stands at Rs.211.9 Crs. Following this, is the last line item on the Assets side and infact on the Balance sheet itself. This is the 'Other current assets' which are not considered important, hence termed 'Other'. This stands at Rs.4.3 Crs.

To sum up, the Total Assets of the company would now be:-

Fixed Assets + Current Assets

= Rs.840.831 Crs + Rs.1298.61 Crs

= Rs. 2139.441 Crs, which is exactly equal to the liabilities of the company.

With this we have now run through the entire Assets side of the Balance sheet, and infact the whole of Balance sheet itself. Let us relook at the balance sheet in its entirety:

Balance Sheet as at March 31, 2014		₹ million	
Particulars	Note No.	As at March 31, 2014	As at March 31, 2013
<b>EQUITY AND LIABILITIES</b>			
Shareholders' funds			
Share capital	2	170.81	170.81
Reserves and surplus	3	13,456.20	10,427.33
		13,627.01	10,598.14
Non-current liabilities			
Long-term borrowings	4	759.47	773.13
Deferred tax liabilities (net)	5	301.33	195.09
Long-term provisions	6	369.57	376.41
		1,430.37	1,344.63
Current liabilities			
Short-term borrowings	7	83.83	98.63
Trade payables	8	1,277.79	1,362.84
Other current liabilities	9	2,156.68	1,807.26
Short-term provisions	6	2,818.73	2,493.20
		6,337.03	5,761.93
<b>Total</b>		<b>21,394.41</b>	<b>17,704.70</b>
<b>ASSETS</b>			
Non-current assets			
Fixed assets	10		
Tangible assets		6,198.94	3,554.97
Intangible assets		32.96	33.69
Capital work-in-progress		1,443.60	1,024.97
Intangible assets under development		3.14	4.84
		7,678.64	4,618.47
Non-current investments	11	160.76	160.76
Long-term loans and advances	12	567.69	353.52
Other non-current assets	13	1.22	3.43
		8,408.31	5,136.18
Current assets			
Inventories	14	3,350.08	2,928.58
Trade receivables	15	4,527.89	3,806.77
Cash and bank balances	16	2,945.67	4,107.90
Short-term loans and advances	12	2,119.30	1,656.78
Other current assets	13	43.16	68.49
		12,986.10	12,568.52
<b>Total</b>		<b>21,394.41</b>	<b>17,704.70</b>
Significant accounting policies	1		

Statement on significant accounting policies and notes are an integral part of the financial statements

As you can see in the above, the balance sheet equation holds true for ARBL's balance sheet,

$$\text{Asset} = \text{Shareholders' Funds} + \text{Liabilities}$$

Do remember, over the last few chapters we have only inspected the balance sheet and the P&L statements. However, we have not analyzed the data to infer if the numbers are good or bad. We will do the same when we look into the financial ratio analysis chapter.

In the next chapter, we will look into the last financial statement which is the cash flow statement. However, before we conclude this chapter we must look into the many ways the Balance sheet and the P&L statement are interconnected.

## 7.5 – Connecting the P&L and Balance Sheet

Let us now focus on the Balance Sheet and the P&L statement and the multiple ways they are connected (or affect) to each other.

Have a look at the following image:

### Connecting the P&L and Balance Sheet



In the image above, on the left hand side we have the line items on a typical standard P&L statement. Corresponding to that on the right hand side we have some of the standard Balance Sheet items. From the previous chapters, you already know what each of these line items mean. However, we will now understand how the line items in the P&L and the Balance Sheet are connected to each other.

To begin with, consider the **Revenue from Sales**. When a company makes a sale it incurs expenses. For example if the company undertakes an advertisement campaign to spread awareness about its products, then naturally the company has to **spend cash** on the campaign. The money spent tends to decrease the cash balance. Also, if the company makes a sale on credit, the **Receivables** (Accounts Receivables) go higher.

**Operating expenses** includes purchase of raw material, finished goods and other similar expenses. When a company incurs these expenses, to manufacture goods two things happen. One, if the purchase is on credit (which invariably is) then the **Trade payables** (accounts payable) go higher. Two, the **Inventory** level also gets affected. Whether the inventory value is high or low, depends on how much time the company needs to sell its products.

When companies purchase Tangible assets or invest in Brand building exercises (Intangible assets) the company spreads the purchase value of the asset over the economic useful life of the asset. This tends to increase the **depreciation** mentioned in the Balance sheet. Do remember the Balance sheet is prepared on a flow basis, hence the Depreciation in balance sheet is accumulated year on year. Please note, Depreciation in Balance sheet is referred to as the **Accumulated depreciation**.

**Other income** includes monies received in the form of interest income, sale of subsidiary companies, rental income etc. Hence, when companies undertake **investment** activities, the other incomes tend to get affected.

As and when the company undertakes **Debt** (it could be short term or long term), the company obviously spends money towards financing the debt. The money that goes towards financing the debt is called the **Finance Cost/Borrowing Cost**. Hence, when debt increases the finance cost also increases and vice versa.

Finally, as you may recall the **Profit after tax (PAT)** adds to the surplus of the company which is a part of the **Shareholders equity**.

---

### Key takeaways from this chapter

1. The Assets side of the Balance sheet displays all the assets the company owns
2. Assets are expected to give an economic benefit during its useful life
3. Assets are classified as Non-current and Current asset
4. The useful life of Non-current assets is expected to last beyond 365 days or 12 months
5. Current assets are expected to payoff within 365 days or 12 months
6. Assets inclusive of depreciation are called the 'Gross Block'
7. Net Block = Gross Block – Accumulated Depreciation
8. The sum of all assets should equal the sum of all liabilities. Only then the Balance sheet is said to have balanced.
9. The Balance sheet and P&L statement are inseparable. They are connected to each other in many ways.

# The Cash Flow statement

## 8.1 – Overview

The Cash flow statement is a very important financial statement, as it reveals how much cash the company is actually generating. Is this information not revealed in the P&L statement you may think? Well, the answer is both a yes and a no.

Consider the following scenario.

Assume a simple coffee shop selling coffee and short eats. All the sales the shop does is mostly on cash basis, meaning if a customer wants to have a cup of coffee and a snack, he needs to have enough money to buy what he wants. Going by that on a particular day, assume the shop manages to sell Rs.2,500/- worth of coffee and Rs.3,000/- worth of snacks. It is evident that the shop's income is Rs.5,500/- for that day. Rs.5,500/- is reported as revenues in P&L, and there is no ambiguity with this.

Now think about another business that sells laptops. For sake of simplicity, let us assume that the shop sells only 1 type of laptop at a standard fixed rate of Rs.25,000/- per laptop. Assume on a certain day, the shop manages to sell 20 such laptops. Clearly the revenue for the shop would be  $Rs.25,000 \times 20 = Rs.500,000/-$ . But what if 5 of the 20 laptops were sold on credit? A credit sale is when the customer takes the product today but pays the cash at a later point in time. In this situation here is how the numbers would look:

Cash sale:  $15 * 25000 = Rs.375,000/-$

Credit sale:  $5 * 25000 = Rs.125,000/-$

Total sales: Rs.500,000/-

If this shop was to show its total revenue in its P&L statement, you would just see a revenue of Rs.500,000/- which may seem good on the face of it. However, how much of this Rs.500,000/- is actually present in the company's bank account is not clear. What if this company had a loan of Rs.400,000/- that had to be repaid back urgently? Even though the company has a sale of Rs.500,000 it has only Rs.375,000/- in its account. This means the company has a cash crunch, as it cannot meet its debt obligations.

The cash flow statement captures this information. A statement of cash flows should be presented as an integral part of an entity's financial statements. Hence in

this context evaluation of the cash flow statement is highly critical as it reveals amongst other things, the true cash position of the company.

To sum up, every company's financial performance is not so much dependent on the profits earned during a period, but more realistically on liquidity or cash flows.



## 8.2 – Activities of a company

Before we go ahead to understand the cash flow statement, it is important to understand 'the activities' of a company. If you think about a company and the various business activities it undertakes, you will realize that the company's activities can be classified under one of the three standard baskets. We will understand this in terms of an example.

Imagine a business, maybe a very well established fitness center (Talwalkars, Gold's Gym etc) with a sound corporate structure. What are the typical business activities you think a fitness center would have? Let me go ahead and list a few business activities:

1. Display advertisements to attract new customers
2. Hire fitness instructors to help clients in their fitness workout
3. Buy new fitness equipments to replace worn out equipments
4. Seek short term loan from bankers
5. Issue a certificate of deposit for raising funds
6. Issue new shares to a few known friends to raise fresh capital for expansion (also called preferential allotment)
7. Invest in a startup company working towards innovative fitness regimes
8. Park excess money (if any) in fixed deposits
9. Invest in a building coming up in the neighborhood, for opening a new fitness center sometime in the future
10. Upgrade the sound system for a better workout experience

As you can see the above listed business activities are quite diverse however they are all related to the business. We can classify these activities as:

1. **Operational activities (OA):** Activities that are directly related to the daily core business operations are called operational activities. Typical operating activities include sales, marketing, manufacturing, technology upgrade, resource hiring etc.
2. **Investing activities (IA):** Activities pertaining to investments that the company makes with an intention of reaping benefits at a later stage. Examples include parking money in interest bearing instruments, investing in equity shares, investing in land, property, plant and equipment, intangibles and other non current assets etc
3. **Financing activities (FA):** Activities pertaining to all financial transactions of the company such as distributing dividends, paying interest to service debt, raising fresh debt, issuing corporate bonds etc

All activities a legitimate company performs can be classified under one of the above three mentioned categories.

Keeping the above three activities in perspective, we will now classify each of the above mentioned activities into one of the three categories /baskets.

1. Display advertisements to attract new customers – **OA**
2. Hire fitness instructors to help customers with their fitness workout – **OA**
3. Buy new fitness equipment to replace worn out equipments – **OA**
4. Seek a short term loan from bankers – **FA**
5. Issue a certificate of deposit (CD) for raising funds – **FA**
6. Issue new shares to few known friends to raise fresh capital for expansion (also called preferential allotment) – **FA**
7. Invest in a startup company working towards innovative fitness regimes – **IA**
8. Park excess money (if any) in fixed deposit – **IA**
9. Invest in a building coming up in the neighborhood for opening a new fitness center sometime in the future – **IA**
10. Upgrade the sound system for better workout experience- **OA**

Now think about the cash moving in and out of the company and its impact on the cash balance. Each activity that the company undertakes has an impact on cash. For example “Upgrade the sound system for a better workout experience” means the company has to pay money towards the purchase of a new sound system, hence the cash balance decreases. Also, it is interesting to note that the new sound system itself will be treated as a company asset.

Keeping this in perspective, we will now understand for the example given above how the various activities listed would impact the cash balance and how would it impact the balance sheet.

Activity No	Activity Type	Rational	Cash Balance	On Balance Sheet
01	OA	Expenditure towards advertisement	Decreases	Treated as an <b>asset</b> as it increases the brand value
02	OA	Expenditure towards new recruits	Decreases	Treated as an <b>asset</b> as it increases the company's intellectual capital
03	OA	Expenditure towards new equipment	Decreases	Treated as <b>asset</b>
04	FA	Loan means cash inflow to business	Increases	Loan is a <b>liability</b>
05	FA	Deposits via CD means cash inflow	Increases	CD is a <b>liability</b>
06	FA	Issue of fresh capital means cash inflow	Increases	Treated as a <b>liability</b> as share capital increases
07	IA	Investment in startup means cash outflow	Decreases	Investment is an <b>asset</b>
08	IA	Money parked in FD means cash going out of business	Decreases	Equivalent to cash, hence considered an <b>asset</b>
09	IA	Investment in building means cash going out of business	Decreases	Gross block considered an <b>asset</b>
10	OA	Expenditure towards the sound system	Decreases	Treated as an <b>asset</b>

The table above is colour coded:

1. Increase in cash is colour coded in blue
2. Decrease in cash is colour coded in red
3. Assets are colour coded in green and
4. Liabilities are colour coded in purple.

If you look through the table and start correlating the 'Cash Balance' and 'Asset/Liability' you will observe that:

1. Whenever the liabilities of the company increases the cash balance also increases
1. This means if the liabilities decreases, the cash balance also decreases
2. Whenever the asset of the company increases, the cash balance decreases
1. This means if the assets decreases, the cash balance increases

The above conclusion is the key concept while constructing a cash flow statement. Also, extending this further you will realize that each activity of the company be it operating activity, financing activity, or investing activity either produces cash (net increase in cash) or reduces (net decrease in cash) the cash for the company.

Hence the total cash flow for the company will be:-

$$\text{Cash Flow of the company} = \text{Net cash flow from operating activities} + \text{Net Cash flow from investing activities} + \text{Net cash flow from financing activities}$$

### **8.3 – The Cash Flow Statement**

Having some insight into the cash flow statement, you would now appreciate the fact that you need to look into the cash flow statement to review the company from a cash perspective.

Typically when companies present their cash flow statement they split the statement into three segments to explicitly show how much cash the company has generated across the three business activities. Continuing with our example from the earlier chapters, here is the cash flow statement of Amara Raja Batteries Limited (ARBL):

Particulars		Year ended March 31, 2014		Year ended March 31, 2013
<b>I. CASH FLOW FROM OPERATING ACTIVITIES</b>				
Profit before tax from continuing operations		5,366.70		4,218.17
Add/(Less): Adjustments for				
a. Depreciation	636.69		577.20	
b. Amortisation	11.04		8.20	
c. Impairment loss	-		75.52	
d. Net income on sale of tangible fixed assets	(2.26)		(0.04)	
e. Tangible fixed assets written off	24.90		44.27	
f. Donation of tangible fixed asset	0.03		-	
g. Interest paid on working capital facilities	0.03		0.11	
h. Provisions and credit balances written back	(3.90)		(6.44)	
i. Bad debts written off	32.33		4.84	
j. Provision for doubtful trade receivables and advances (net)	(30.50)		(38.69)	
k. Exchange gain on restatement - other than borrowings (net)	(33.81)		(13.18)	
l. Provision for leave encashment	14.83		33.43	
m. Provision for gratuity	6.75		8.74	
n. Provision for warranty	(40.22)		156.14	
o. Dividend received	(144.19)		(145.27)	
p. Interest received on bank and other deposits	(137.94)		(112.29)	
q. Interest on income tax	6.70		2.03	
r. Provision for wealth tax	2.00	342.48	1.83	596.40
<b>Operating profit before working capital changes</b>		<b>5,709.18</b>		<b>4,814.57</b>
Add/(Less): Adjustments for working capital changes				
a. Increase in inventories	(421.50)		(262.41)	
b. Increase in trade receivables	(711.71)		(571.57)	
c. Increase in loans and advances	(445.72)		(421.49)	
d. Increase/(decrease) in trade payables	(77.73)		490.32	
e. Increase in other current liabilities	341.23	(1,315.43)	671.36	(93.79)
<b>Cash generated from operations</b>		<b>4,393.75</b>		<b>4,720.78</b>
Less: a. Income tax	1,604.42		1,365.95	
b. Wealth tax	1.83	1,606.25	0.18	1,366.13
<b>Net cash from operating activities - A</b>		<b>2,787.50</b>		<b>3,354.65</b>

I will skip going through each line item as most of them are self explanatory, however I want you to notice that ARBL has generated Rs.278.7 Crs from operating activities. Note, a company which has a positive cash flow from operating activities is always a sign of financial well being.

Here is the snapshot of ARBL's cash flow from investing activities:

<b>II. CASH FLOW FROM INVESTING ACTIVITIES</b>			
a. Purchase of tangible fixed assets		(3,303.66)	(724.78)
b. Purchase of intangible fixed assets		(10.30)	(20.97)
c. Increase in capital work-in-progress		(423.26)	(718.50)
d. Decrease/(increase) in intangible assets under development		1.69	(0.25)
e. Sale of tangible fixed assets		4.98	1.80
g. Interest received on bank and other deposits		137.94	112.29
h. Dividend received		144.19	145.27
<b>Net cash from investing activities - B</b>		<b>(3,448.42)</b>	<b>(1,205.14)</b>

As you can see, ARBL has consumed Rs.344.8 Crs in its investing activities. This is quite intuitive as investing activities tend to consume cash. Also remember healthy

investing activities foretells the investor that the company is serious about its business expansion. Of course how much is considered healthy and how much is not, is something we will understand as we proceed through this module.

Finally, here is the snapshot of ARBL's cash balance from financing activities:

Particulars	Year ended March 31, 2014	Year ended March 31, 2013
<b>III. CASH FLOW FROM FINANCING ACTIVITIES</b>		
a. Short term borrowings from banks availed / repaid	(13.70)	42.59
b. Interest free sales tax deferment repaid	(13.67)	(16.92)
c. Interest paid on working capital facilities	(0.03)	(0.11)
d. Dividend paid	(430.45)	(322.84)
e. Dividend tax paid	(73.15)	(52.37)
<b>Net cash from financing activities - C</b>	<b>(531.00)</b>	<b>(349.65)</b>

ARBL consumed Rs.53.1Crs through its financing activities. If you notice the bulk of the money went in paying dividends. **Also, if ARBL takes on new debt in future it would lead to an increase in the cash balance** (remember increase in liabilities, increases cash balance). We know from the balance sheet that ARBL did not undertake any new debt.

Let us summarize the cash flow from all the activities:

Cash Flow from	Rupees Crores (2013-14)	Rupees Crores (2012-13)
Operating Activities	278.7	335.4
Investing Activities	(344.8)	(120.05)
Financing Activities	(53.1)	(34.96)
<b>Total</b>	<b>(119.19)</b>	<b>179.986</b>

This means the company consumed a total cash of Rs.119.19 Crs for the financial year 2013 -2014. Fair enough, but what about the cash from the previous year? As we can see, the company generated Rs.179.986 Crs through all its activities from the previous year. Here is an extract from ARBL's cash flow statement:

Opening cash and cash equivalents	4,094.68	2,283.19
Add: Net increase/(decrease) in cash and cash equivalents	(1,191.92)	1,799.86
Add: Effect of foreign exchange differences on restatement of cash and cash equivalents	25.87	11.63
Closing cash and cash equivalents	2,928.63	4,094.68

Look at the section highlighted in green (for the year 2013-14). It says the opening balance for the year is Rs.409.46Crs. How did they get this? Well, this happens to be the closing balance for the previous year (refer to the arrow marks). Add to this the current year's cash equivalents which is (Rs.119.19) Crs along with a minor forex exchange difference of Rs.2.58 Crs we get the total cash position of the company which is Rs.292.86 Crs. This means, while the company guzzled cash on a yearly basis, they still have adequate cash, thanks to the carry forward from the previous year.

Note, the closing balance of 2013-14 will now be the opening balance for the FY 2014 – 15. You can watch out for this when ARBL provides its cash flow numbers for the year ended 31<sup>st</sup> March 2015.

At this point, let us run through a few interesting questions and answers:

1. What does Rs.292.86 Crs actually state?
1. This literally shows how much cash ARBL has in its various bank accounts
2. What is cash?
1. Cash comprises cash on hand and demand deposits. Obviously, this is a liquid asset of the company
3. What are liquid assets?
1. Liquid assets are assets that can be easily converted to cash or cash equivalents
4. Are liquid assets similar to 'current items' that we looked at in the Balance sheet?
1. Yes, you can think of it that way
5. If cash is current and cash is an asset, shouldn't it reflect under the current asset on the Balance sheet?
1. Exactly and here it is. Look at the balance sheet extract below.

ASSETS		
<b>Non-current assets</b>		
Fixed assets	10	
Tangible assets	6,198.94	3,554.97
Intangible assets	32.96	33.69
Capital work-in-progress	1,443.60	1,024.97
Intangible assets under development	3.14	4.84
	<b>7,678.64</b>	<b>4,618.47</b>
Non-current investments	11	160.76
Long-term loans and advances	12	567.69
Other non-current assets	13	1.22
	<b>8,408.31</b>	<b>5,136.18</b>
<b>Current assets</b>		
Inventories	14	3,350.08
Trade receivables	15	4,527.89
Cash and bank balances	16	2,945.67
Short-term loans and advances	12	2,119.30
Other current assets	13	43.16
	<b>12,986.10</b>	<b>12,568.52</b>

Clearly, we can now infer that the cash flow statement and the balance sheet interact with each other. This is in line with what we had discussed earlier i.e all the three financial statements are interconnected with each other.

#### **8.4 – A brief on the financial statements**

Over the last few chapters we have discussed the three important financial statements of the company i.e the P&L statement, the Balance Sheet and the Cash Flow statement of the company. While the Cash flow and P&L statement are prepared on a standalone basis (representing the financial position for the given year), the Balance Sheet is prepared on a flow basis.

The P&L statement discusses how much the company earned as revenues versus how much the company expended in terms of expenses. The retained earnings of the company also called the surplus of the company are carried forward to the balance sheet. The P&L also incorporates the depreciation number. The depreciation mentioned in the P&L statement is carried forward to the balance sheet.

The Balance Sheet details the company's assets and liabilities. On the liabilities side of the Balance sheet the company represents the shareholders' funds. The assets should always be equal to the liabilities, only then do we say the balance sheet has balanced. One of the key details on the balance sheet is the cash and cash equivalents of the firm. This number tells us, how much money the company has in its bank account. This number comes from the cash flow statement.

The cash flow statement provides information to the users of the financial statements about the entity's ability to generate cash and cash equivalents as well as indicates the cash needs of a company. The statement of cash flows are prepared on a historical basis providing information about the cash and cash equivalents, classifying cash flows into operating, financing and investing activities. The final number of the cash flow tells us how much money the company has in its bank account.

We have so far looked into how to read the financial statements and what to expect out of each one of them. We have not yet ventured into how to analyze these numbers. One of the ways to analyze the financial numbers is by calculating a few important financial ratios. In fact we will focus on the financial ratios in the next few chapters.

---

## **Key takeaways from this chapter**

1. The Cash flow statement gives us a picture of the true cash position of the company
2. A legitimate company has three main activities – operating activities, investing activities and the financing activities
3. Each activity either generates or drains money for the company
4. The net cash flow for the company is the sum of operating activities, investing activities and the financing activities
5. Investors should specifically look at the cash flow from operating activities of the company
6. When the liabilities increase, cash level increases and vice versa
7. When the assets increase, cash level decreases and vice versa
8. The net cash flow number for the year is also reflected in the balance sheet
9. The Statement of Cash flow is a useful addition to the financial statements of a company because it indicates the company's performance.

# The Financial Ratio Analysis (Part 1)

## **9.1 – A note on Financial Ratios**

Over the last few chapters we have understood how to read the financial statements. We will now focus our attention on analyzing these financial statements. The best way to analyze the financial statements is by studying the 'Financial Ratios'. The theory of financial ratios was made popular by Benjamin Graham, who is popularly known as the father of fundamental analysis. Financial ratios help in interpreting the results, and allows comparison with previous years and other companies in the same industry.

A typical financial ratio utilizes data from the financial statement to compute its value. Before we start understanding the financial ratios, we need to be aware of certain attributes of the financial ratios.

On its own merit, the financial ratio of a company conveys very little information. For instance, assume Ultratech Cements Limited has a profit margin of 15%, how useful do you think this information is? Well, not much really. 15% profit margin is good, but how would I know if it is the best?

However, assume you figure out ACC Cement's profit margin is 12%. Now, as we comparing two similar companies, comparing the profitability makes sense. Clearly, Ultratech Cements Limited seems to be a more profitable company between the two. The point that I am trying to drive across is that more often than not, Financial Ratios on its own is quite mute. The ratio makes sense only when you compare the ratio with another company of a similar size or when you look into the trend of the financial ratio. This means that once the ratio is computed the ratio has to be analyzed (either by comparison or tracking the ratio's historical trend) to get the best possible inference.

Also, here is something that you need to be aware off while computing ratios. Accounting policies may vary across companies and across different financial years. A fundamental analyst should be cognizant of this fact and should adjust the data accordingly, before computing the financial ratio.

## 9.2 – The Financial Ratios

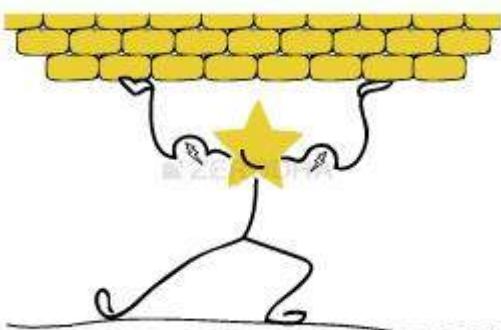
Financial ratios can be ‘somewhat loosely’ classified into different categories, namely

–

1. Profitability Ratios
2. Leverage Ratios
3. Valuation Ratios
4. Operating Ratios



**The Profitability ratios** help the analyst measure the profitability of the company. The ratios convey how well the company is able to perform in terms of generating profits. Profitability of a company also signals the competitiveness of the management. As the profits are needed for business expansion and to pay dividends to its shareholders a company's profitability is an important consideration for the shareholders.



**The Leverage ratios** also referred to as solvency ratios/ gearing ratios measures the company's ability (in the long term) to sustain its day to day operations. Leverage ratios measure the extent to which the company uses the debt to finance growth. Remember for the company to sustain its operations, it has to pay its bills and obligations. Solvency ratios help us understand the company's long term sustainability, keeping its obligation in perspective.



**The Valuation ratios** compare the stock price of the company with either the profitability of the company or the overall value of company to get a sense of how cheap or expensive the stock is trading. Thus this ratio helps us in analysing whether the current share price of the company is perceived as high or low. In simpler words, the valuation ratio compares the cost of a security with the perks of owning the stock.



**The Operating Ratios**, also called the 'Activity Ratios' measures the efficiency at which a business can convert its assets (both current and noncurrent) into revenues. This ratio helps us understand how efficient the management of the company is. For this reason, Operating Ratios are sometimes called the 'Management Ratios'.

Strictly speaking, ratios (irrespective of the category it belongs to) convey a certain message, usually related to the financial position of the company. For example, 'Profitability Ratio' can convey the efficiency of the company, which is usually measured by computing the 'Operating Ratio'. Because of such overlaps, it is difficult to classify these ratios. Hence the ratios are 'somewhat loosely' classified.

### 9.3 – The Profitability Ratios

We will look into the following ratios under 'The Profitability Ratio':

1. EBITDA Margin (Operating Profit Margin)
  - o EBITDA Growth (CAGR)
2. PAT Margin
  - o PAT Growth (CAGR)

3. Return on Equity (ROE)
4. Return on Asset (ROA)
5. Return on Capital Employed (ROCE)

**EBITDA Margin:**

**The Earnings before Interest Tax Depreciation & Amortization (EBITDA)**

**Margin** indicates the efficiency of the management. It tells us how efficient the company's operating model is. EBITDA Margin tells us how profitable (in percentage terms) the company is at an operating level. It always makes sense to compare the EBITDA margin of the company versus its competitor to get a sense of the management's efficiency in terms of managing their expense.

In order to calculate the EBITDA Margin, we first need to calculate the EBITDA itself.

**EBITDA = [Operating Revenues – Operating Expense]**

Operating Revenues = [Total Revenue – Other Income]

Operating Expense = [Total Expense – Finance Cost – Depreciation & Amortization]

**EBITDA Margin = EBITDA / [Total Revenue – Other Income]**

Continuing the example of Amara Raja Batteries Limited, the EBITDA Margin calculation for the FY14 is as follows:

We first calculate EBITDA , which is computed as follows:

[Total Revenue – Other Income] – [Total Expense – Finance Cost – Depreciation & Amortization]

Note: Other income is income by virtue of investments and other non operational activity. Including other income in EBITDA calculation would clearly skew the data. For this reason, we have to exclude Other Income from Total Revenues.

$$[3482 - 46] - [2942 - 0.7 - 65]$$

$$= [3436] - [2876]$$

**= 560 Crores**

Hence the EBITDA Margin is:

$$560 / 3436$$

**= 16.3%**

I have two questions for you at this stage:

1. What does an EBITDA of Rs.560 Crs and an EBITDA margin of 16.3% indicate?
2. How good or bad an EBITDA margin of 16.3% is?

The first question is a fairly simple. An EBITDA of Rs.560 Crs means that the company has retained Rs.560 Crs from its operating revenue of Rs.3436 Crs. This also means out of Rs.3436 Crs the company spent Rs.2876 Crs towards its expenses. In percentage terms, the company spent 83.7% of its revenue towards its expenses and retained 16.3% of the revenue at the operating level, for its operations.

Now for the 2<sup>nd</sup> question, hopefully you should **not** have an answer.

Remember we did discuss this point earlier in this chapter. A financial ratio on its own conveys very little information. To make sense of it, we should either see the trend or compare it with its peers. Going with this, a 16.3% EBITDA margin conveys very little information.

To make some sense of the EBITDA margin, let us look at Amara Raja's EBITDA margin trend for the last 4 years, (all numbers in Rs Crs, except EBITDA margin):

Year	Operating Revenues	Operating Expense	EBITDA	EBITDA Margin
2011	1761	1504	257	14.6%
2012	2364	2025	340	14.4%
2013	2959	2508	451	15.2%
2014	3437	2876	560	16.3%

It appears that ARBL has maintained its EBITDA at an average of 15%, and in fact on a closer look it is clear the EBITDA margin is increasing. This is a good sign as it shows consistency and efficiency in the management's operational capabilities.

In 2011 the EBITDA was Rs.257 Crs and in 2014 the EBITDA is Rs.560Crs. This translates to a 4 year **EBITDA CAGR growth** of 21%.

Please note, we have discussed the formula for CAGR in [module 1](#).

Clearly, it appears that both EBITDA margin and EBITDA growth are quite impressive. However we still do not know if it is the best. In order to find out if it is the best one needs to compare these numbers with its competitors. In case of ARBL

it would be Exide batteries Limited. I would encourage you to do the same for Exide and compare the results.

### **PAT Margin:**

While the EBITDA margin is calculated at the operating level, the Profit After Tax (PAT) margin is calculated at the final profitability level. At the operating level we consider only the operating expenses however there are other expenses such as depreciation and finance costs which are not considered. Along with these expenses there are tax expenses as well. When we calculate the PAT margin, all expenses are deducted from the Total Revenues of the company to identify the overall profitability of the company.

### **PAT Margin = [PAT/Total Revenues]**

PAT is explicitly stated in the Annual Report. ARBL's PAT for the FY14 is Rs.367 Crs on the overall revenue of Rs.3482 Crs (including other income). This translates to a PAT margin of:

$$= 367 / 3482$$

$$= 10.5 \%$$

Here is the PAT and PAT margin trend for ARBL:

Year	PAT (in INR Crs)	PAT Margin
2011	148	8.4%
2012	215	8.9%
2013	287	9.6%
2014	367	10.5%

The PAT and PAT margin trend seems impressive as we can clearly see a margin expansion. The 4 year CAGR growth stands at 25.48%, which is again good. Needless to say, it always makes sense to compare ratios with its competitors.

### **Return on Equity (RoE):**

The Return on Equity (RoE) is a very important ratio, as it helps the investor assess the return the shareholder earns for every unit of capital invested. RoE measures the entity's ability to generate profits from the shareholders investments. In other words, RoE shows the efficiency of the company in terms of generating profits to its shareholders. Obviously, higher the RoE, the better it is for the shareholders. In fact this is one of the key ratios that helps the investor identify investable attributes of the company. To give you a perspective, the average RoE of top Indian companies vary between 14 – 16%. I personally prefer to invest in companies that have a RoE of 18% upwards.

This ratio is compared with the other companies in the same industry and is also observed over time.

Also note, if the RoE is high, it means a good amount of cash is being generated by the company, hence the need for external funds is less. Thus a higher ROE indicates a higher level of management performance.

### **RoE can be calculated as: [Net Profit / Shareholders Equity\* 100]**

There is no doubt that RoE is an important ratio to calculate, but like any other financial ratios it also has a few drawbacks. To help you understand its drawbacks, consider this hypothetical example.

Assume Vishal runs a Pizza store. To bake pizza's Vishal needs an oven which costs him Rs.10,000/- . Oven is an asset to Vishal's business. He procures the oven from his own funds and seeks no external debt. At this stage you would agree on his balance sheet he has a shareholder equity of Rs.10,000 and an asset equivalent to Rs.10,000.

Now, assume in his first year of operation, Vishal generates a profit of Rs.2500/- . What is his RoE? This is quite simple to compute:

$$\text{RoE} = 2500/10000 * 100$$

$$= 25.0\%.$$

Now let us twist the story a bit. Vishal has only Rs.8000/- he borrows Rs.2000 from his father to purchase an oven worth Rs.10000/- . How do you think his balance sheet would look?

On the liability side he would have:

$$\text{Shareholder Equity} = \text{Rs.8000}$$

$$\text{Debt} = \text{Rs.2000}$$

This makes Vishal's total liability Rs. 10,000. Balancing this on the asset side, he has an asset worth Rs.10,000. Let us see how his RoE looks now:

$$\text{RoE} = 2500 / 8000 * 100$$

$$= 31.25\%$$

With an additional debt, the RoE shot up quite significantly. Now, what if Vishal had only Rs.5000 and borrowed the additional Rs.5000 from his father to buy the oven. His balance sheet would look like this:

On the liability side he would have:

$$\text{Shareholder Equity} = \text{Rs.5000}$$

$$\text{Debt} = \text{Rs.5000}$$

Vishal's total liability is Rs. 10,000. Balancing this on the asset side, he has an asset worth Rs.10,000. Let us see how his RoE looks now:

$$\text{RoE} = 2500 / 5000 * 100$$

$$= 50.0\%$$

Clearly, higher the debt Vishal seeks to finance his asset, (which in turn is required to generate profits) higher is the RoE. A high RoE is great, but certainly not at the cost of high debt. The problem is with a high amount of debt, running the business gets very risky as the finance cost increases drastically. For this reason inspecting the RoE closely becomes extremely important. One way to do this is by implementing a technique called the '**DuPont Model**' also called **DuPont Identity**.

This model was developed in 1920's by the DuPont Corporation. DuPont Model breaks up the RoE formula into three components with each part representing a certain aspect of business. The DuPont analysis uses both the P&L statement and the Balance sheet for the computation.

The RoE as per DuPont model can be calculated as:

<b>Return on Equity</b>	$= \frac{\text{Net Profit}}{\text{Net Sales}} \times \frac{\text{Net Sales}}{\text{Avg Total Assets}} \times \frac{\text{Avg Total Assets}}{\text{Shareholder Equity}}$
-------------------------	---

If you notice the above formula, the denominator and the numerator cancels out with one another eventually leaving us with the original RoE formula which is:

$$\text{RoE} = \text{Net Profit} / \text{Shareholder Equity} * 100$$

However in the process of decomposing the RoE formula, we gained insights into three distinct aspects of the business. Let us look into the three components of the DuPont model that makes up the RoE formula :

- **Net Profit Margin = Net Profits/ Net Sales\*100**

This is the first part of the DuPont Model and it expresses the company's ability to generate profits. This is nothing but the PAT margin we looked at earlier in this chapter. A low Net profit margin would indicate higher costs and increased competition.

- **Asset Turnover = Net Sales / Average Total asset**

Asset turnover ratio is an efficiency ratio that indicates how efficiently the company is using its assets to generate revenue. Higher the ratio, it means the company is using its assets more efficiently. Lower the ratio, it could indicate management or production problems. The resulting figure is expressed as number of times per year.

- **Financial Leverage = Average Total Assets / Shareholders Equity**

Financial leverage helps us answer this question – 'For every unit of shareholders equity, how many units of assets does the company have'. For example if the financial leverage is 4, this means for every Rs.1 of equity, the company supports Rs.4 worth of assets. Higher the financial leverage along with increased amounts of debt, will indicate the company is highly leveraged and hence the investor should exercise caution. The resulting figure is expressed as number of times per year.

As you can see, the DuPont model breaks up the RoE formula into three distinct components, with each component giving an insight into the company's operating and financial capabilities.

Let us now proceed to implement the DuPont Model to calculate Amara Raja's RoE for the FY 14. For this we need to calculate the values of the individual components.

**Net Profit Margin:** As I mentioned earlier, this is same as the PAT margin. From our calculation earlier, we know the Net Profit Margin for ARBL is **9.2%**

### **Asset Turnover = Net Sales / Average Total assets**

We know from the FY14 Annual Report, Net sales of ARBL stands at Rs.3437 Crs.

The denominator has Average Total Assets which we know can be sourced from the Balance Sheet. But what does the word 'Average' indicate?

From ARBL's balance sheet, the total asset for FY14 is Rs.2139Crs. But think about this, the reported number is for the Financial Year 2014, which starts from 1<sup>st</sup> of April 2013 and close on 31<sup>st</sup> March 2014. This implies that at the start of the financial year 2014 (1<sup>st</sup> April 2013), the company must have commenced its operation with assets that it carried forward from the previous financial year (FY 2013). During the financial year (FY 2014) the company has acquired some more assets which when added to the previous year's (FY2013) assets totaled to Rs.2139 Crs. Clearly the company started the financial year with a certain rupee value of assets but closed the year with a totally different rupee value of assets.

Keeping this in perspective, if I were to calculate the asset turnover ratio, which asset value should I consider for the denominator? Should I consider the asset value at the beginning of the year or at the asset value at the end of the year? To avoid confusion, the practice is to take average of the asset values for the two financial years.

Do remember this technique of averaging line items, as we will be using this across other ratios as well.

From ARBL's annual report we know:

Net Sales in FY14 is Rs.3437Crs

Total Assets in FY13 is Rs.1770 Crs

Total Assets in FY14 is Rs.2139 Crs

Average Assets =  $(1770 + 2139) / 2$

= 1955

Asset Turnover =  $3437 / 1955$

**= 1.75 times**

This means for every Rs.1 of asset deployed, the company is generating Rs.1.75 in revenues.

We will now calculate the last component that is the Financial Leverage.

**Financial Leverage = Average Total Assets / Average Shareholders Equity**

We know the average total assets is Rs.1955. We just need to look into the shareholders equity. For reasons similar to taking the "Average Assets" as opposed to just the current year assets, we will consider "Average Shareholder equity" as opposed to just the current year's shareholder equity.

Shareholders Equity for FY13 = Rs.1059 Crs

Shareholders Equity for FY14 = Rs.1362 Crs

Average shareholder equity = Rs.1211 Crs

Financial Leverage =  $1955 / 1211$

**= 1.61 times**

Considering ARBL has little debt, Financial Leverage of 1.61 is indeed an encouraging number. The number above indicates that for every Rs.1 of Equity, ARBL supports Rs.1.61 of assets.

We now have all the inputs to calculate RoE for ARBL, we will now proceed to do the same:

**RoE = Net Profit Margin X Asset Turnover X Financial Leverage**

$$= 9.2\% * 1.75 * 1.61$$

**~ 25.9%.** Quite impressive I must say!

I understand this is a lengthy way to calculate RoE, but this is perhaps the best way as in the process of calculating RoE, we can develop valuable insights into the business. DuPont model not only answers what the return is but also the quality of the return.

However if you wish do a quick RoE calculation you can do so the following way:

**RoE = Net Profits / Avg shareholders Equity**

From the annual report we know for the FY14 the PAT is Rs.367 Crs

$$\text{RoE} = 367 / 1211$$

$$= 30.31\%$$

### **Return on Asset (RoA):**

Having understood the DuPont Model, understanding the next two ratios should be simple. Return on Assets (RoA) evaluates the effectiveness of the entity's ability to use the assets to create profits. A well managed entity limits investments in non productive assets. Hence RoA indicates the management's efficiency at deploying its assets. Needless to say, higher the RoA, the better it is.

**RoA = [Net income + interest\*(1-tax rate)] / Total Average Assets**

From the Annual Report, we know:

Net income for FY 14 = Rs.367.4 Crs

And we know from the Dupont Model the Total average assets (for FY13 and FY14) = Rs.1955 Crs

So what does **interest \*(1- tax rate)** mean? Well, think about it, the loan taken by the company is also used to finance the assets which in turn is used to generate profits. So in a sense, the debtholders (entities who have given loan to the company) are also a part of the company. From this perspective the interest paid

out also belongs to a stakeholder of the company. Also, the company benefits in terms of paying lesser taxes when interest is paid out, this is called a 'tax shield'. For these reasons, we need to add interest (by accounting for the tax shield) while calculating the ROA.

The Interest amount (finance cost) is Rs.7 Crs, accounting for the tax shield it would be

$$= 7 * (1 - 32\%)$$

= 4.76 Crs . Please note, 32% is the average tax rate.

Hence ROA would be -

$$\text{RoA} = [367.4 + 4.76] / 1955$$

$$\sim 372.16 / 1955$$

**~19.03%**

### **Return on Capital Employed (ROCE):**

The Return on Capital employed indicates the profitability of the company taking into consideration the overall capital it employs.

Overall capital includes both equity and debt (both long term and short term).

**ROCE = [Profit before Interest & Taxes / Overall Capital Employed]**

Overall Capital Employed = Short term Debt + Long term Debt + Equity

From ARBL's Annual Report we know:

Profit before Interest & Taxes = Rs.537.7 Crs

Overall Capital Employed:

Short term debt: Rs.8.3 Crs

Long term borrowing: Rs.75.9 Crs

Shareholders equity = Rs.1362 Crs

Overall capital employed:  $8.3 + 75.9 + 1362 = 1446.2$  Crs

$$\text{ROCE} = 537.7 / 1446.2$$

**= 37.18%**

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

1. A Financial ratio is a useful financial metric of a company. On its own merit the ratio conveys very little information
2. It is best to study the ratio's recent trend or compare it with the company's peers to develop an opinion
3. Financial ratios can be categorized into 'Profitability', 'Leverage', 'Valuation', and 'Operating' ratios. Each of these categories give the analyst a certain view on the company's business
4. EBITDA is the amount of money the company makes after subtracting the operational expenses of the company from its operating revenue
5. EBITDA margin indicates the percentage profitability of the company at the operating level
6. PAT margin gives the overall profitability of the firm
7. Return on Equity (ROE) is a very valuable ratio. It indicates how much return the shareholders are making over their initial investment in the company
8. A high ROE and a high debt is not a great sign
9. DuPont Model helps in decomposing the ROE into different parts, with each part throwing light on different aspects of the business
10. DuPont method is probably the best way to calculate the ROE of a firm
11. Return on Assets is an indicator of how efficiently the company is utilizing its assets
12. Return on Capital employed indicates the overall return the company generates considering both the equity and debt.
13. For the ratios to be useful, it should be analyzed in comparison with other companies in the same industry.
14. Also, ratios should be analyzed both at a single point in time and as an indicator of broader trends over time

# The Financial Ratio Analysis (Part 1)

## **9.1 – A note on Financial Ratios**

Over the last few chapters we have understood how to read the financial statements. We will now focus our attention on analyzing these financial statements. The best way to analyze the financial statements is by studying the ‘Financial Ratios’. The theory of financial ratios was made popular by Benjamin Graham, who is popularly known as the father of fundamental analysis. Financial ratios help in interpreting the results, and allows comparison with previous years and other companies in the same industry.

A typical financial ratio utilizes data from the financial statement to compute its value. Before we start understanding the financial ratios, we need to be aware of certain attributes of the financial ratios.

On its own merit, the financial ratio of a company conveys very little information. For instance, assume Ultratech Cements Limited has a profit margin of 15%, how useful do you think this information is? Well, not much really. 15% profit margin is good, but how would I know if it is the best?

However, assume you figure out ACC Cement’s profit margin is 12%. Now, as we comparing two similar companies, comparing the profitability makes sense. Clearly, Ultratech Cements Limited seems to be a more profitable company between the two. The point that I am trying to drive across is that more often than not, Financial Ratios on its own is quite mute. The ratio makes sense only when you compare the ratio with another company of a similar size or when you look into the trend of the financial ratio. This means that once the ratio is computed the ratio has to be

analyzed (either by comparison or tracking the ratio's historical trend) to get the best possible inference.

Also, here is something that you need to be aware off while computing ratios. Accounting policies may vary across companies and across different financial years. A fundamental analyst should be cognizant of this fact and should adjust the data accordingly, before computing the financial ratio.

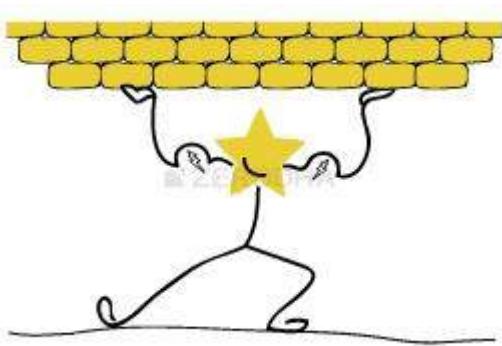
## 9.2 – The Financial Ratios

Financial ratios can be 'somewhat loosely' classified into different categories, namely –

1. Profitability Ratios
2. Leverage Ratios
3. Valuation Ratios
4. Operating Ratios



**The Profitability ratios** help the analyst measure the profitability of the company. The ratios convey how well the company is able to perform in terms of generating profits. Profitability of a company also signals the competitiveness of the management. As the profits are needed for business expansion and to pay dividends to its shareholders a company's profitability is an important consideration for the shareholders.



**The Leverage ratios** also referred to as solvency ratios/ gearing ratios measures the company's ability (in the long term) to sustain its day to day operations.

Leverage ratios measure the extent to which the company uses the debt to finance growth. Remember for the company to sustain its operations, it has to pay its bills and obligations. Solvency ratios help us understand the company's long term sustainability, keeping its obligation in perspective.



**The Valuation ratios** compare the stock price of the company with either the profitability of the company or the overall value of company to get a sense of how cheap or expensive the stock is trading. Thus this ratio helps us in analysing whether the current share price of the company is perceived as high or low. In simpler words, the valuation ratio compares the cost of a security with the perks of owning the stock.



**The Operating Ratios**, also called the 'Activity Ratios' measures the efficiency at which a business can convert its assets (both current and noncurrent) into revenues. This ratio helps us understand how efficient the management of the company is. For this reason, Operating Ratios are sometimes called the 'Management Ratios'.

Strictly speaking, ratios (irrespective of the category it belongs to) convey a certain message, usually related to the financial position of the company. For example, 'Profitability Ratio' can convey the efficiency of the company, which is usually measured by computing the 'Operating Ratio'. Because of such overlaps, it is difficult to classify these ratios. Hence the ratios are 'somewhat loosely' classified.

### 9.3 – The Profitability Ratios

We will look into the following ratios under 'The Profitability Ratio':

1. EBITDA Margin (Operating Profit Margin)
  - o EBITDA Growth (CAGR)
2. PAT Margin
  - o PAT Growth (CAGR)
3. Return on Equity (ROE)
4. Return on Asset (ROA)
5. Return on Capital Employed (ROCE)

**EBITDA Margin:**

**The Earnings before Interest Tax Depreciation & Amortization (EBITDA)**

**Margin** indicates the efficiency of the management. It tells us how efficient the company's operating model is. EBITDA Margin tells us how profitable (in percentage terms) the company is at an operating level. It always makes sense to compare the EBITDA margin of the company versus its competitor to get a sense of the management's efficiency in terms of managing their expense.

In order to calculate the EBITDA Margin, we first need to calculate the EBITDA itself.

**EBITDA = [Operating Revenues – Operating Expense]**

Operating Revenues = [Total Revenue – Other Income]

Operating Expense = [Total Expense – Finance Cost – Depreciation & Amortization]

**EBITDA Margin = EBITDA / [Total Revenue – Other Income]**

Continuing the example of Amara Raja Batteries Limited, the EBITDA Margin calculation for the FY14 is as follows:

We first calculate EBITDA , which is computed as follows:

[Total Revenue – Other Income] – [Total Expense – Finance Cost – Depreciation & Amortization]

Note: Other income is income by virtue of investments and other non operational activity. Including other income in EBITDA calculation would clearly skew the data. For this reason, we have to exclude Other Income from Total Revenues.

$$[3482 - 46] - [2942 - 0.7 - 65]$$

$$= [3436] - [2876]$$

**= 560 Crores**

Hence the EBITDA Margin is:

$$560 / 3436$$

= 16.3%

I have two questions for you at this stage:

1. What does an EBITDA of Rs.560 Crs and an EBITDA margin of 16.3% indicate?
2. How good or bad an EBITDA margin of 16.3% is?

The first question is a fairly simple. An EBITDA of Rs.560 Crs means that the company has retained Rs.560 Crs from its operating revenue of Rs.3436 Crs. This also means out of Rs.3436 Crs the company spent Rs.2876 Crs towards its expenses. In percentage terms, the company spent 83.7% of its revenue towards its expenses and retained 16.3% of the revenue at the operating level, for its operations.

Now for the 2<sup>nd</sup> question, hopefully you should **not** have an answer.

Remember we did discuss this point earlier in this chapter. A financial ratio on its own conveys very little information. To make sense of it, we should either see the trend or compare it with its peers. Going with this, a 16.3% EBITDA margin conveys very little information.

To make some sense of the EBITDA margin, let us look at Amara Raja's EBITDA margin trend for the last 4 years, (all numbers in Rs Crs, except EBITDA margin):

Year	Operating Revenues	Operating Expense	EBITDA	EBITDA Margin
2011	1761	1504	257	14.6%
2012	2364	2025	340	14.4%
2013	2959	2508	451	15.2%
2014	3437	2876	560	16.3%

It appears that ARBL has maintained its EBITDA at an average of 15%, and in fact on a closer look it is clear the EBITDA margin is increasing. This is a good sign as it shows consistency and efficiency in the management's operational capabilities.

In 2011 the EBITDA was Rs.257 Crs and in 2014 the EBITDA is Rs.560Crs. This translates to a 4 year **EBITDA CAGR growth** of 21%.

Please note, we have discussed the formula for CAGR in module 1.

Clearly, it appears that both EBITDA margin and EBITDA growth are quite impressive. However we still do not know if it is the best. In order to find out if it is the best one needs to compare these numbers with its competitors. In case of ARBL it would be Exide batteries Limited. I would encourage you to do the same for Exide and compare the results.

### **PAT Margin:**

While the EBITDA margin is calculated at the operating level, the Profit After Tax (PAT) margin is calculated at the final profitability level. At the operating level we consider only the operating expenses however there are other expenses such as depreciation and finance costs which are not considered. Along with these expenses there are tax expenses as well. When we calculate the PAT margin, all expenses are deducted from the Total Revenues of the company to identify the overall profitability of the company.

### **PAT Margin = [PAT/Total Revenues]**

PAT is explicitly stated in the Annual Report. ARBL's PAT for the FY14 is Rs.367 Crs on the overall revenue of Rs.3482 Crs (including other income). This translates to a PAT margin of:

$$= 367 / 3482$$

$$= 10.5 \%$$

Here is the PAT and PAT margin trend for ARBL:

Year	PAT (in INR Crs)	PAT Margin
2011	148	8.4%
2012	215	8.9%
2013	287	9.6%
2014	367	10.5%

The PAT and PAT margin trend seems impressive as we can clearly see a margin expansion. The 4 year CAGR growth stands at 25.48%, which is again good. Needless to say, it always makes sense to compare ratios with its competitors.

### **Return on Equity (RoE):**

The Return on Equity (RoE) is a very important ratio, as it helps the investor assess the return the shareholder earns for every unit of capital invested. RoE measures the entity's ability to generate profits from the shareholders investments. In other words, RoE shows the efficiency of the company in terms of generating profits to its shareholders. Obviously, higher the RoE, the better it is for the shareholders. In fact this is one of the key ratios that helps the investor identify investable attributes of the company. To give you a perspective, the average RoE of top Indian companies vary between 14 – 16%. I personally prefer to invest in companies that have a RoE of 18% upwards.

This ratio is compared with the other companies in the same industry and is also observed over time.

Also note, if the RoE is high, it means a good amount of cash is being generated by the company, hence the need for external funds is less. Thus a higher ROE indicates a higher level of management performance.

**RoE can be calculated as: [Net Profit / Shareholders Equity\* 100]**

There is no doubt that RoE is an important ratio to calculate, but like any other financial ratios it also has a few drawbacks. To help you understand its drawbacks, consider this hypothetical example.

Assume Vishal runs a Pizza store. To bake pizza's Vishal needs an oven which costs him Rs.10,000/- . Oven is an asset to Vishal's business. He procures the oven from his own funds and seeks no external debt. At this stage you would agree on his balance sheet he has a shareholder equity of Rs.10,000 and an asset equivalent to Rs.10,000.

Now, assume in his first year of operation, Vishal generates a profit of Rs.2500/- . What is his RoE? This is quite simple to compute:

$$\text{RoE} = 2500/10000*100$$

$$=25.0\%.$$

Now let us twist the story a bit. Vishal has only Rs.8000/- he borrows Rs.2000 from his father to purchase an oven worth Rs.10000/- . How do you think his balance sheet would look?

On the liability side he would have:

$$\text{Shareholder Equity} = \text{Rs.8000}$$

$$\text{Debt} = \text{Rs.2000}$$

This makes Vishal's total liability Rs. 10,000. Balancing this on the asset side, he has an asset worth Rs.10,000. Let us see how his RoE looks now:

$$\text{RoE} = 2500 / 8000 * 100$$

$$= 31.25\%$$

With an additional debt, the RoE shot up quite significantly. Now, what if Vishal had only Rs.5000 and borrowed the additional Rs.5000 from his father to buy the oven. His balance sheet would look like this:

On the liability side he would have:

$$\text{Shareholder Equity} = \text{Rs.5000}$$

$$\text{Debt} = \text{Rs.5000}$$

Vishal's total liability is Rs. 10,000. Balancing this on the asset side, he has an asset worth Rs.10,000. Let us see how his RoE looks now:

$$\text{RoE} = 2500 / 5000 * 100$$

$$= 50.0\%$$

Clearly, higher the debt Vishal seeks to finance his asset, (which in turn is required to generate profits) higher is the RoE. A high RoE is great, but certainly not at the cost of high debt. The problem is with a high amount of debt, running the business gets very risky as the finance cost increases drastically. For this reason inspecting the RoE closely becomes extremely important. One way to do this is by implementing a technique called the '**DuPont Model' also called DuPont Identity.**

This model was developed in 1920's by the DuPont Corporation. DuPont Model breaks up the RoE formula into three components with each part representing a certain aspect of business. The DuPont analysis uses both the P&L statement and the Balance sheet for the computation.

The RoE as per DuPont model can be calculated as:

$$\text{Return on Equity} = \frac{\text{Net Profit}}{\text{Net Sales}} \times \frac{\text{Net Sales}}{\text{Avg Total Assets}} \times \frac{\text{Avg Total Assets}}{\text{Shareholder Equity}}$$

If you notice the above formula, the denominator and the numerator cancels out with one another eventually leaving us with the original RoE formula which is:

$$\text{RoE} = \text{Net Profit} / \text{Shareholder Equity} * 100$$

However in the process of decomposing the RoE formula, we gained insights into three distinct aspects of the business. Let us look into the three components of the DuPont model that makes up the RoE formula :

- **Net Profit Margin = Net Profits/ Net Sales\*100**

This is the first part of the DuPont Model and it expresses the company's ability to generate profits. This is nothing but the PAT margin we looked at earlier in this chapter. A low Net profit margin would indicate higher costs and increased competition.

- **Asset Turnover = Net Sales / Average Total asset**

Asset turnover ratio is an efficiency ratio that indicates how efficiently the company is using its assets to generate revenue. Higher the ratio, it means the company is using its assets more efficiently. Lower the ratio, it could indicate management or production problems. The resulting figure is expressed as number of times per year.

- **Financial Leverage = Average Total Assets / Shareholders Equity**

Financial leverage helps us answer this question – 'For every unit of shareholders equity, how many units of assets does the company have'. For example if the financial leverage is 4, this means for every Rs.1 of equity, the company supports Rs.4 worth of assets. Higher the financial leverage along with increased amounts of debt, will indicate the company is highly leveraged and hence the investor should exercise caution. The resulting figure is expressed as number of times per year.

As you can see, the DuPont model breaks up the RoE formula into three distinct components, with each component giving an insight into the company's operating and financial capabilities.

Let us now proceed to implement the DuPont Model to calculate Amara Raja's RoE for the FY 14. For this we need to calculate the values of the individual components.

**Net Profit Margin:** As I mentioned earlier, this is same as the PAT margin. From our calculation earlier, we know the Net Profit Margin for ARBL is **9.2%**

### **Asset Turnover = Net Sales / Average Total assets**

We know from the FY14 Annual Report, Net sales of ARBL stands at Rs.3437 Crs.

The denominator has Average Total Assets which we know can be sourced from the Balance Sheet. But what does the word 'Average' indicate?

From ARBL's balance sheet, the total asset for FY14 is Rs.2139Crs. But think about this, the reported number is for the Financial Year 2014, which starts from 1<sup>st</sup> of April 2013 and close on 31<sup>st</sup> March 2014. This implies that at the start of the financial year 2014 (1<sup>st</sup> April 2013), the company must have commenced its operation with assets that it carried forward from the previous financial year (FY 2013). During the financial year (FY 2014) the company has acquired some more assets which when added to the previous year's (FY2013) assets totaled to Rs.2139 Crs. Clearly the company started the financial year with a certain rupee value of assets but closed the year with a totally different rupee value of assets.

Keeping this in perspective, if I were to calculate the asset turnover ratio, which asset value should I consider for the denominator? Should I consider the asset value at the beginning of the year or at the asset value at the end of the year? To avoid confusion, the practice is to take average of the asset values for the two financial years.

Do remember this technique of averaging line items, as we will be using this across other ratios as well.

From ARBL's annual report we know:

Net Sales in FY14 is Rs.3437Crs

Total Assets in FY13 is Rs.1770 Crs

Total Assets in FY14 is Rs.2139 Crs

$$\text{Average Assets} = (1770 + 2139) / 2$$

$$= 1955$$

$$\text{Asset Turnover} = 3437 / 1955$$

$$= \mathbf{1.75 \text{ times}}$$

This means for every Rs.1 of asset deployed, the company is generating Rs.1.75 in revenues.

We will now calculate the last component that is the Financial Leverage.

### **Financial Leverage = Average Total Assets / Average Shareholders Equity**

We know the average total assets is Rs.1955. We just need to look into the shareholders equity. For reasons similar to taking the "Average Assets" as opposed to just the current year assets, we will consider "Average Shareholder equity" as opposed to just the current year's shareholder equity.

Shareholders Equity for FY13 = Rs.1059 Crs

Shareholders Equity for FY14 = Rs.1362 Crs

$$\text{Average shareholder equity} = \text{Rs.1211 Crs}$$

$$\text{Financial Leverage} = 1955 / 1211$$

$$= \mathbf{1.61 \text{ times}}$$

Considering ARBL has little debt, Financial Leverage of 1.61 is indeed an encouraging number. The number above indicates that for every Rs.1 of Equity, ARBL supports Rs.1.61 of assets.

We now have all the inputs to calculate RoE for ARBL, we will now proceed to do the same:

**RoE = Net Profit Margin X Asset Turnover X Financial Leverage**

$$= 9.2\% * 1.75 * 1.61$$

**~ 25.9%.** Quite impressive I must say!

I understand this is a lengthy way to calculate RoE, but this is perhaps the best way as in the process of calculating RoE, we can develop valuable insights into the business. DuPont model not only answers what the return is but also the quality of the return.

However if you wish do a quick RoE calculation you can do so the following way:

**RoE = Net Profits / Avg shareholders Equity**

From the annual report we know for the FY14 the PAT is Rs.367 Crs

$$\text{RoE} = 367 / 1211$$

$$= 30.31\%$$

### **Return on Asset (RoA):**

Having understood the DuPont Model, understanding the next two ratios should be simple. Return on Assets (RoA) evaluates the effectiveness of the entity's ability to use the assets to create profits. A well managed entity limits investments in non productive assets. Hence RoA indicates the management's efficiency at deploying its assets. Needless to say, higher the RoA, the better it is.

**RoA = [Net income + interest\*(1-tax rate)] / Total Average Assets**

From the Annual Report, we know:

Net income for FY 14 = Rs.367.4 Crs

And we know from the Dupont Model the Total average assets (for FY13 and FY14) = Rs.1955 Crs

So what does **interest \*(1- tax rate)** mean? Well, think about it, the loan taken by the company is also used to finance the assets which in turn is used to generate profits. So in a sense, the debtholders (entities who have given loan to the company) are also a part of the company. From this perspective the interest paid

out also belongs to a stakeholder of the company. Also, the company benefits in terms of paying lesser taxes when interest is paid out, this is called a 'tax shield'. For these reasons, we need to add interest (by accounting for the tax shield) while calculating the ROA.

The Interest amount (finance cost) is Rs.7 Crs, accounting for the tax shield it would be

$$= 7 * (1 - 32\%)$$

= 4.76 Crs . Please note, 32% is the average tax rate.

Hence ROA would be -

$$\text{RoA} = [367.4 + 4.76] / 1955$$

$$\sim 372.16 / 1955$$

**~19.03%**

### **Return on Capital Employed (ROCE):**

The Return on Capital employed indicates the profitability of the company taking into consideration the overall capital it employs.

Overall capital includes both equity and debt (both long term and short term).

**ROCE = [Profit before Interest & Taxes / Overall Capital Employed]**

Overall Capital Employed = Short term Debt + Long term Debt + Equity

From ARBL's Annual Report we know:

Profit before Interest & Taxes = Rs.537.7 Crs

Overall Capital Employed:

Short term debt: Rs.8.3 Crs

Long term borrowing: Rs.75.9 Crs

Shareholders equity = Rs.1362 Crs

Overall capital employed:  $8.3 + 75.9 + 1362 = 1446.2$  Crs

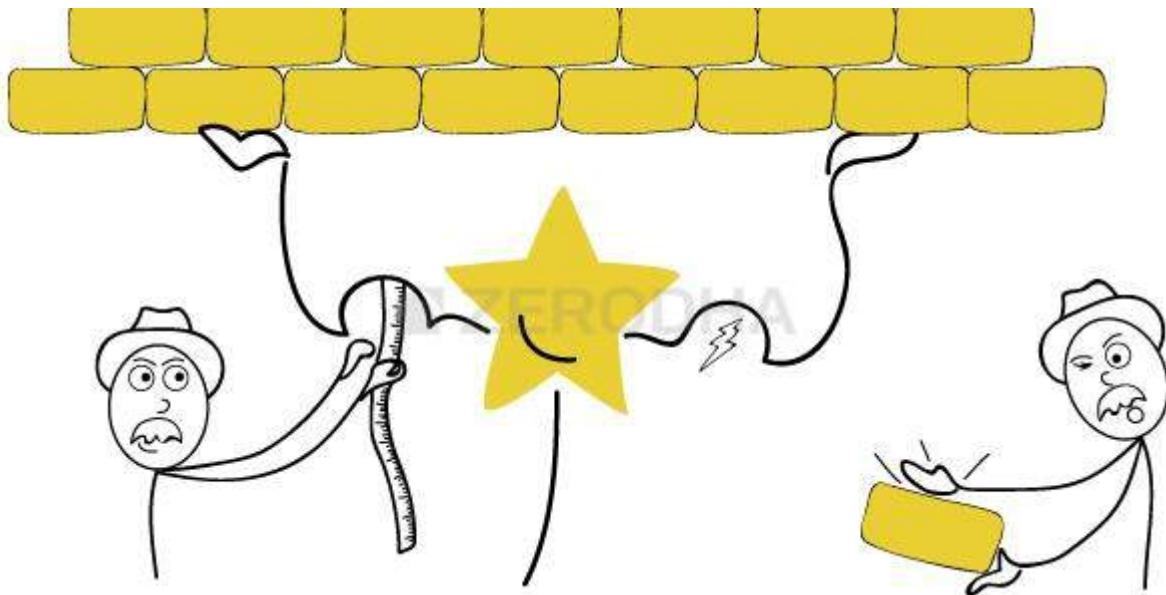
$$\text{ROCE} = 537.7 / 1446.2$$

**= 37.18%**

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

1. A Financial ratio is a useful financial metric of a company. On its own merit the ratio conveys very little information
2. It is best to study the ratio's recent trend or compare it with the company's peers to develop an opinion
3. Financial ratios can be categorized into 'Profitability', 'Leverage', 'Valuation', and 'Operating' ratios. Each of these categories give the analyst a certain view on the company's business
4. EBITDA is the amount of money the company makes after subtracting the operational expenses of the company from its operating revenue
5. EBITDA margin indicates the percentage profitability of the company at the operating level
6. PAT margin gives the overall profitability of the firm
7. Return on Equity (ROE) is a very valuable ratio. It indicates how much return the shareholders are making over their initial investment in the company
8. A high ROE and a high debt is not a great sign
9. DuPont Model helps in decomposing the ROE into different parts, with each part throwing light on different aspects of the business
10. DuPont method is probably the best way to calculate the ROE of a firm
11. Return on Assets is an indicator of how efficiently the company is utilizing its assets
12. Return on Capital employed indicates the overall return the company generates considering both the equity and debt.
13. For the ratios to be useful, it should be analyzed in comparison with other companies in the same industry.
14. Also, ratios should be analyzed both at a single point in time and as an indicator of broader trends over time

## The Financial Ratio Analysis (Part 2)



### 10.1 – The Leverage Ratios

We touched upon the topic of financial leverage while discussing Return on Equity and the DuPont analysis. The use of leverage (debt) is like a double edged sword.

Well managed companies seek debt if they foresee a situation where, they can deploy the debt funds in an environment which generates a higher return in contrast to the interest payments the company has to make to service its debt. Do recollect a judicious use of debt to finance assets also increases the return on equity.

However if a company takes on too much debt, then the interest paid to service the debt eats into the profit share of the shareholders. Hence there is a very thin line that separates the good and the bad debt. Leverage ratios mainly deal with the overall extent of the company's debt, and help us understand the company's financial leverage better.

We will be looking into the following leverage ratios:

1. Interest Coverage Ratio
2. Debt to Equity Ratio

3. Debt to Asset Ratio
4. Financial Leverage Ratio

So far we have been using Amara Raja Batteries Limited (ARBL) as an example, however to understand leverage ratios, we will look into a company that has a sizable debt on its balance sheet. I have chosen Jain Irrigation Systems Limited (JISL), I would encourage you calculate the ratios for a company of your choice.

### **Interest Coverage Ratio:**

The interest coverage ratio is also referred to as debt service ratio or the debt service coverage ratio. The interest coverage ratio helps us understand how much the company is earning relative to the interest burden of the company. This ratio helps us interpret how easily a company can pay its interest payments. For example, if the company has an interest burden of Rs.100 versus an income of Rs.400, then we clearly know that the company has sufficient funds to service its debt. However a low interest coverage ratio could mean a higher debt burden and a greater possibility of bankruptcy or default.

The formula to calculate the interest coverage ratio:

**[Earnings before Interest and Tax / Interest Payment]**

The 'Earnings before Interest and Tax' (EBIT) is:

EBITDA – Depreciation & Amortization

Let us apply this ratio on Jain Irrigation Limited. Here is the snapshot of Jain Irrigation's P&L statement for the FY 14, I have highlighted the Finance costs in red:

**CONSOLIDATED STATEMENT  
OF PROFIT AND LOSS FOR THE  
YEAR ENDED 31-MARCH-2014**



	Note No.	2013-2014	₹ in Million 2012-2013
Revenue from operations	22	59,850.48	51,334.07
Less: Excise duty		(1,578.17)	(1,116.91)
Revenue from operations (net)		58,281.31	50,217.16
Other income	23	462.99	667.78
<b>Total revenue</b>		<b>58,744.30</b>	<b>50,884.94</b>
<b>Expenses</b>			
Cost of materials consumed	24	33,910.43	27,938.45
Changes in inventories of finished goods and work in progress	25	(501.88)	285.83
Employee benefit expenses	26	6,141.30	5,018.79
Finance costs	27	4,676.45	4,855.21
Depreciation and amortisation expense	13	2,045.40	1,695.59
Other expenses	28	11,404.66	9,921.82
Cost of self-generated capital equipment		(372.87)	(201.13)
<b>Total expenses</b>		<b>57,303.49</b>	<b>49,514.56</b>
<b>Profit/(Loss) before exceptional and extraordinary items and tax</b>		<b>1,440.81</b>	<b>1,370.38</b>
Exceptional items		2,300.37	1,245.09
<b>Profit/(Loss) before tax</b>		<b>(859.56)</b>	<b>125.29</b>
Tax expense			
- Current tax	29	233.03	175.08
- Deferred tax		(694.67)	(94.96)
Prior period expense		-	-
<b>Profit/(Loss) for the year before minority interest</b>		<b>(397.92)</b>	<b>45.17</b>
Share of loss in associate		-	(6.53)
Minority interest		(0.28)	(7.84)
<b>Profit/(Loss) for the year</b>		<b>(398.20)</b>	<b>30.80</b>
Earnings per share: (Face value ₹ 2 per share)	30		
Basic		(0.87)	0.07
Diluted		(0.87)	0.07

We know EBITDA = [Revenue - Expenses]

To calculate the expenses, we exclude the Finance cost (Rs.467.64Crs) and Depreciation & Amortization cost (Rs.204.54) from the total expenses of Rs.5730.34 Crs.

Therefore EBITDA = Rs.5828.13 – 5058.15 Crs

EBITDA = Rs. 769.98 Crs

We know EBIT = EBITDA – [Depreciation & Amortization]

= Rs.769.98 – 204.54

= Rs. 565.44

We know Finance Cost = Rs.467.64,

Hence Interest coverage is:

= 565.44/ 467.64

**= 1.209x**

The 'x' in the above number represents a multiple. Hence 1.209x should be read as 1.209 'times'.

Interest coverage ratio of 1.209x suggests that for every Rupee of interest payment due, Jain Irrigation Limited is generating an EBIT of 1.209 times.

### **Debt to Equity Ratio:**

This is a fairly straightforward ratio. Both the variables required for this computation can be found in the Balance Sheet. It measures the amount of the total debt capital with respect to the total equity capital. A value of 1 on this ratio indicates an equal amount of debt and equity capital. Higher debt to equity (more than 1) indicates higher leverage and hence one needs to be careful. Lower than 1 indicates a relatively bigger equity base with respect to the debt.

The formula to calculate Debt to Equity ratio is:

**[Total Debt/Total Equity]**

Please note, the total debt here includes both the short term debt and the long term debt.

Here is JSIL's Balance Sheet, I have highlighted total equity, long term, and short term debt:

#### **CONSOLIDATED BALANCE SHEET AS AT 31-MARCH-2014**

	Note No.	31-Mar-2014	31-Mar-2013
<b>EQUITY AND LIABILITIES</b>			
<b>Shareholders' Funds</b>			
Share capital	2	924.83	909.83
Reserves and surplus	3	20,830.66	20,607.97
Money received against share warrants	4	-	161.81
		21,755.49	21,679.61
Minority Interest		204.77	-
<b>Non-current liabilities</b>			
Long term borrowings	5	14,976.83	14,329.38
Deferred tax liabilities (net)	6	1,411.72	1,841.30
Other long term liabilities	7	177.85	75.12
Long term provisions	8	64.30	49.14
		16,630.50	16,294.94
<b>Current liabilities</b>			
Short term borrowings	9	21,889.15	19,840.56
Trade payables	10	13,432.69	13,378.84
Other current liabilities	11	7,579.49	6,522.43
Short term provisions	12	552.38	491.46
		43,453.71	40,233.29
<b>TOTAL</b>		<b>82,044.47</b>	<b>78,207.84</b>

Total debt = Long term borrowings + Short term borrowings

$$= 1497.663 + 2188.915$$

$$= \text{Rs.}3686.578\text{Crs}$$

Total Equity is Rs.2175.549 Crs

Thus, Debt to Equity ratio will be computed as follows:

$$= 3686.578 / 2175.549$$

$$= \mathbf{1.69}$$

### **Debt to Asset Ratio:**

This ratio helps us understand the asset financing pattern of the company. It conveys to us how much of the total assets are financed through debt capital.

The formula to calculate the same is:

### **Total Debt / Total Assets**

For JSIL, we know the total debt is Rs.3686.578Crs.

From the Balance Sheet, we know the total assets as Rs.8204.447 Crs:

ASSETS			
Non-current assets			
<b>Fixed assets</b>			
Goodwill on consolidation	13[A]	2,192.12	1,759.49
Tangible assets	13[B]	25,003.91	23,772.59
Intangible assets	13[C]	575.41	554.00
Capital work-in-progress		806.88	748.95
		28,578.32	26,835.03
<b>Non-current investments</b>	14	14.16	38.38
<b>Deferred tax assets (net)</b>	6	1,194.25	929.16
<b>Long term loans and advances</b>	15	3,260.87	2,264.10
<b>Other non-current assets</b>	16	1,050.66	1,694.75
<b>Current assets</b>			
Inventories 17	18,363.88	17,230.64	
Trade receivables	18	17,994.04	19,546.59
Cash and bank balances	19	1,968.15	2,358.86
Short term loans and advances	20	5,557.59	3,543.74
Other current assets	21	4,062.55	3,766.59
		47,946.21	46,446.42
<b>TOTAL</b>		<b>82,044.47</b>	<b>78,207.84</b>

Hence the Debt to Asset ratio is:

$$=3686.578 / 8204.44$$

$$= \mathbf{0.449} \text{ or } \mathbf{\sim 45\%}.$$

This means roughly about 45% of the assets held by JSIL is financed through debt capital or creditors (and therefore 55% is financed by the owners). Needless to say, higher the percentage the more concerned the investor would be as it indicates higher leverage and risk.

### **Financial Leverage Ratio**

We briefly looked at the financial leverage ratio in the previous chapter, when we discussed about Return on Equity. The financial leverage ratio gives us an indication, to what extent the assets are supported by equity.

The formula to calculate the Financial Leverage Ratio is:

### **Average Total Asset / Average Total Equity**

From JSIL's FY14 balance sheet, I know the average total assets is Rs.8012.615. The average total equity is Rs.2171.755. Hence the financial leverage ratio or simply the leverage ratio is:

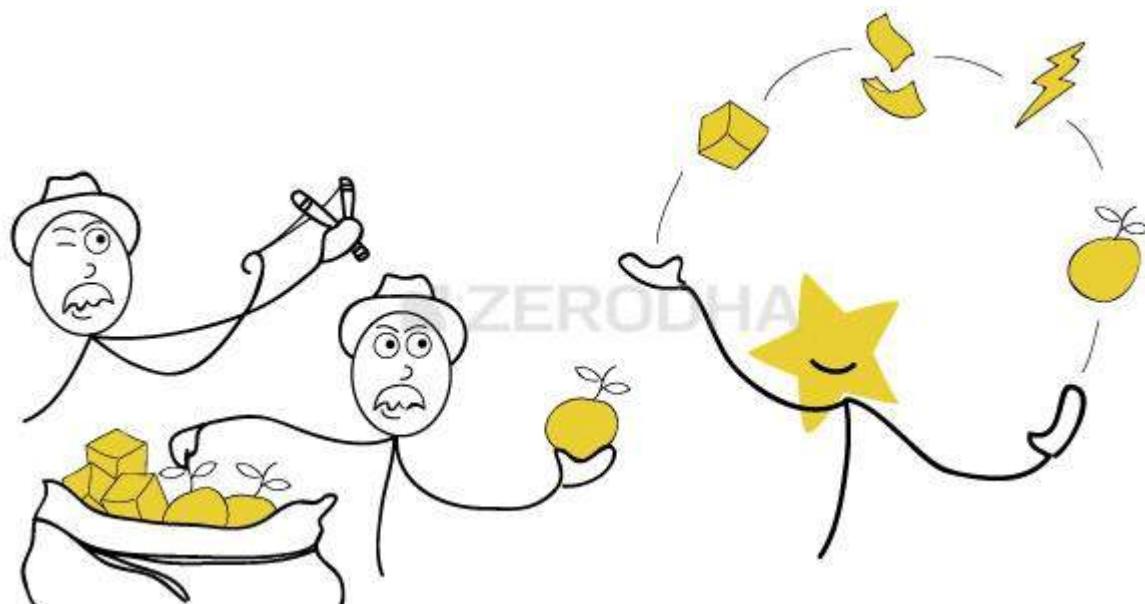
$$8012.615 / 2171.755$$

$$= \mathbf{3.68}$$

This means JSIL supports Rs.3.68 units of assets for every unit of equity. Do remember higher the number, higher is the company's leverage and the more careful the investor needs to be.

## 10.2 – Operating Ratios

Operating Ratios also called 'Activity ratios' or the 'Management ratios' indicate the efficiency of the company's operational activity. To some degree, the operating ratios reveal the management's efficiency as well. These ratios are called the Asset Management Ratios, as these ratios indicate the efficiency with which the assets of the company are utilized.



Some of the popular Operating Ratios are:

1. Fixed Assets Turnover Ratio
2. Working Capital Turnover Ratio
3. Total Assets Turnover Ratio
4. Inventory Turnover Ratio
5. Inventory Number of Days
6. Receivable Turnover Ratio
7. Days Sales Outstanding (DSO)

The above ratios combine data from both the P&L statement and Balance sheet. We will understand these ratios by calculating them for Amara Raja Batteries Limited.

To get a true sense of how good or bad the operating ratios of a company are, one must compare the ratios with the company's peers /competitors or these ratios should be compared over the years for the same company.

## Fixed Assets Turnover

The ratio measures the extent of the revenue generated in comparison to its investment in fixed assets. It tells us how effectively the company uses its plant and equipment. Fixed assets include the property, plant and equipment. Higher the ratio, it means the company is effectively and efficiently managing its fixed assets.

### Fixed Assets Turnover = Operating Revenues / Total Average Asset

The assets considered while calculating the fixed assets turnover should be net of accumulated depreciation, which is nothing but the net block of the company. It should also include the capital work in progress. Also, we take the average assets for reasons discussed in the previous chapter.

From ARBL's FY14 Balance Sheet:

ASSETS			
Non-current assets			
Fixed assets	10		
Tangible assets		6,198.94	3,554.97
Intangible assets		32.96	33.69
Capital work-in-progress		1,443.60	1,024.97
Intangible assets under development		3.14	4.84
		7,678.64	4,618.47

$$= (767.864 + 461.847)/2$$

$$= \text{Rs.}614.855 \text{ Crs}$$

We know the operating revenue for FY14 is Rs.3436.7 Crs, hence the Fixed Asset Turnover ratio is:

$$= 3436.7 / 614.85$$

$$= 5.59$$

While evaluating this ratio, do keep in mind the stage the company is in. For a very well established company, the company may not be utilizing its cash to invest in fixed assets. However for a growing company, the company may invest in fixed assets and hence the fixed assets value may increase year on year. You can notice this in case of ARBL as well, for the FY13 the Fixed assets value is at Rs.461.8 Crs and for the FY14 the fixed asset value is at Rs.767.8 Crs.

This ratio is mostly used by capital intensive industries to analyze how effectively the fixed assets of the company are used.

## Working Capital Turnover

Working capital refers to the capital required by the firm to run its day to day operations. To run the day to day operations, the company needs certain type of assets. Typically such assets are – inventories, receivables, cash etc. If you realize these are current assets. A well managed company finances the current assets by current liabilities. The difference between the current assets and current liabilities gives us the working capital of the company.

## Working Capital = Current Assets – Current Liabilities

If the working capital is a positive number, it implies that the company has **working capital surplus** and can easily manage its day to day operations. However if the working capital is negative, it means the company has a **working capital deficit**. Usually if the company has a working capital deficit, they seek a working capital loan from their bankers.

The concept of 'Working Capital Management' in itself is a huge topic in Corporate Finance. It includes inventory management, cash management, debtor's management etc. The company's CFO (Chief Financial Officer) strives to manage the company's working capital efficiently. Of course, we will not get into this topic as we will digress from our main topic.

The working capital turnover ratio is also referred to as Net sales to working capital. The working capital turnover indicates how much revenue the company generates for every unit of working capital. Suppose the ratio is 4, then it indicates that the company generates Rs.4 in revenue for every Rs.1 of working capital. Needless to say, higher the number, better it is. Also, do remember all ratios should be compared with its peers/competitors in the same industry and with the company's past and planned ratio to get a deeper insight of its performance.

The formula to calculate the Working Capital Turnover:

**Working Capital Turnover = [Revenue / Average Working Capital]**

Let us implement the same for Amara Raja Batteries Limited. To begin with, we need to calculate the working capital for the FY13 and the FY14 and then find out the average. Here is the snapshot of ARBL's Balance sheet, I have highlighted the current assets (red) and current liabilities (green) for both the years:

Current liabilities			
Short-term borrowings	7	83.83	98.63
Trade payables	8	1,277.79	1,362.84
Other current liabilities	9	2,156.68	1,807.26
Short-term provisions	6	2,818.73	2,493.20
		6,337.03	5,761.93
Total		21,394.41	17,704.70
ASSETS			
Non-current assets			
Fixed assets	10		
Tangible assets		6,198.94	3,554.97
Intangible assets		32.96	33.69
Capital work-in-progress		1,443.60	1,024.97
Intangible assets under development		3.14	4.84
		7,678.64	4,618.47
Non-current investments	11	160.76	160.76
Long-term loans and advances	12	567.69	353.52
Other non-current assets	13	1.22	3.43
		8,408.31	5,136.18
Current assets			
Inventories	14	3,350.08	2,928.58
Trade receivables	15	4,527.89	3,806.77
Cash and bank balances	16	2,945.67	4,107.90
Short-term loans and advances	12	2,119.30	1,656.78
Other current assets	13	43.16	68.49
		12,986.10	12,568.52

The average working capital for the two financial years can be calculated as follows:

Current Assets for the FY13	Rs.1256.85
Current Liabilities for the FY13	Rs.576.19
<b>Working Capital for the FY13</b>	<b>Rs.680.66</b>
Current Asset for the FY14	Rs.1298.61
Current Liability for the FY14	Rs.633.70
<b>Working Capital for the FY14</b>	<b>Rs.664.91</b>
<b>Average Working Capital</b>	<b>Rs.672.78</b>

We know the revenue from operations for ARBL is Rs.3437 Crs. Hence the working capital turnover ratio is:

$$= 3437 / 672.78$$

**= 5.11 times**

The number indicates that for every Rs.1 of working capital, the company is generating Rs.5.11 in terms of revenue. Higher the working capital turnover ratio the better it is, as it indicates the company is generating better sales in comparison with the money it uses to fund the sales.

### **Total Assets Turnover**

This is a very straight forward ratio. It indicates the company's capability to generate revenues with the given amount of assets. Here the assets include both the fixed assets as well as current assets. A higher total asset turnover ratio compared to its historical data and competitor data means the company is using its assets well to generate more sales.

**Total Asset Turnover = Operating Revenue / Average Total Assets**

The average total assets for ARBL is as follows –

Total Assets for FY 13 – Rs.1770.5 Crs and Total Assets for FY 14 – 2139.4 Crs. Hence the average assets would be Rs. 1954.95 Crs.

Operating revenue (FY 14) is Rs. 3437 Crs. Hence Total Asset Turnover is:

$$= 3437 / 1954.95$$

**= 1.75 times**

### **Inventory Turnover Ratio**

Inventory refers to the finished goods that a company maintains in its store or showroom with an expectation of selling the finished goods to prospective clients. Typically, the company besides keeping the goods in the store would also keep some additional units of finished goods in its warehouse.

If a company is selling popular products, then the goods in the inventory gets cleared rapidly, and the company has to replenish the inventory time and again. This is called the 'Inventory turnover'.

For example think about a bakery selling hot bread. If the bakery is popular, the baker probably knows how many pounds of bread he is likely to sell on any given day. For example, he could sell 200 pounds of bread daily. This means he has to maintain an inventory of 200 pounds of bread every day. So, in this case the rate of replenishing the inventory and the inventory turnover is quite high.

This may not be true for every business. For instance, think of a car manufacturer. Obviously selling cars is not as easy as selling bread. If the manufacturer produces 50 cars, he may have to wait for sometime before he sells these cars. Assume, to sell 50 cars (his inventory capacity) he will need 3 months. This means, every 3 months he turns over his inventory. Hence in a year he turns over his inventory 4 times.

Finally, if the product is really popular the inventory turnover would be high. This is exactly what the 'Inventory Turnover Ratio' indicates.

The formula to calculate the ratio is:

**Inventory Turnover = [Cost of Goods Sold / Average Inventory]**

Cost of goods sold is the cost involved in making the finished good. We can find this in the P&L Statement of the company. Let us implement this for ARBL.

To evaluate the cost of goods sold, I need to look into the expense of the company, here is the extract of the same:

<b>EXPENSES</b>			
Cost of materials consumed	19	21,011.95	17,603.12
Purchases of stock-in-trade	20	2,113.69	2,632.54
Changes in inventories of finished goods, work-in-process and stock-in-trade	20	(292.10)	(320.89)
Employee benefits expense	21	1,583.16	1,262.30
Finance costs	22	7.18	2.69
Depreciation and amortisation expense [includes impairment loss of ₹Nil (PY ₹75.52 million)]	23	645.71	660.92
Other expenses	24	4,346.60	3,904.24

Cost of materials consumed is Rs.2101.19 Crs and purchases of stock-in-trade is Rs.211.36 Crs. These line items are directly related to the cost of goods sold. Along with this I would also like to inspect 'Other Expenses' to identify any costs that are related to the cost of goods sold. Here is the extract of Note 24, which details 'Other Expenses'.

Particulars	₹ million	
	Year ended March 31, 2014	Year ended March 31, 2013
<b>A. Manufacturing expenses</b>		
a. Stores and spares consumed (including packing material)	449.41	378.41
b. Power and fuel	922.56	978.14
c. Insurance	8.49	7.29
d. Repairs and maintenance to		
i) Machinery	44.46	55.79
ii) Buildings	18.72	63.18
Total (A)	1,443.64	1,433.91
<b>B. Selling expenses</b>		
a. Advertisement and promotion	275.85	154.41
b. Freight outward	595.20	553.25
c. Commission on sales	8.40	10.13
d. Service expenses	219.36	94.16
e. Warehousing and secondary freight	250.50	223.43
f. Other sales expenses	242.15	155.81
g. Royalty on sales	-	0.05
h. Product warranties	383.15	494.62
Total (B)	1,974.61	1,685.86

There are two expenses that are directly related to manufacturing i.e. Stores & spares consumed which is at Rs.44.94 Crs and the Power & Fuel cost which is at Rs.92.25Crs.

Hence the Cost of Goods Sold = Cost of materials consumed + Purchase of stock in trade + Stores & spares consumed + Power & Fuel  
= 2101.19 + 211.36 + 44.94 + 92.25  
COGS= Rs.2449.74 Crs

This takes care of the numerator. For the denominator, we just take the average inventory for the FY13 and FY14. From the balance sheet – Inventory for the FY13 is Rs.292.85 Crs and for the FY14 is Rs.335.00 Crs. The average works out to Rs.313.92 Crs

The Inventory turnover ratio is:  
= 2449.74 / 313.92

= 7.8 times

~ 8.0 times a year

This means Amara Raja Batteries Limited turns over its inventory 8 times in a year or once in every 1.5 months. Needless to say, to get a true sense of how good or bad this number is, one should compare it with its competitor's numbers.

### Inventory Number of days

While the Inventory turnover ratio gives a sense of how many times the company 'replenishes' their inventory, the 'Inventory number of Days' gives a sense of how much time the company takes to convert its inventory into cash. Lesser the number of days, the better it is. A short inventory number of day's number implies, the company's products are fast moving. The formula to calculate the inventory number of days is:

**Inventory Number of Days = 365 / Inventory Turnover**

The inventory number of days is usually calculated on a yearly basis. Hence in the formula above, 365 indicates the number of days in a year.

Calculating this for ARBL:

$$= 365 / 7.8$$

$$= 46.79 \text{ days}$$

**~ 47.0 days**

This means ARBL roughly takes about 47 days to convert its inventory into cash. Needless to say, the inventory number of days of a company should be compared with its competitors, to get a sense of how the company's products are moving.

Now here is something for you to think about – What would you think about the following situation?

1. A certain company under consideration has a high inventory turnover ratio
2. Because of a high inventory turnover ratio, the inventory number of days is very low  
On the face of it, the inventory management of this company looks good. A high inventory turnover ratio signifies that the company is replenishing its inventory quickly, which is excellent. Along with the high inventory turnover, a low inventory number of days indicate that the company is quickly able to convert its goods into cash. Again, this is a sign of great inventory management.

However, what if the company has a great product (hence they are able to sell quickly) but a low production capacity? Even in this case the inventory turnover will be high and inventory days will be low. But a low production capacity can be a bit worrisome as it raises many questions about the company's production:

1. Why is the company not able to increase their production?

2. Are they not able to increase production because they are short of funds?
3. If they are short of funds, why can't they seek a bank loan?
4. Have they approached a bank and are not been able to raise a loan successfully?
5. If they are not able to raise a loan, why?
6. What if the management does not have a great track record, hence the banks hesitation to give a loan?
7. If funds are not a problem, why can't the company increase production?
8. Is sourcing raw materials difficult? Is the raw material required regulated by government (like Coal, power, Oil etc).
9. Difficult access to raw material – does that mean the business is not scalable?

As you can see, if any of the points above is true, then a red flag is raised, hence investing in the company may not be advisable. To fully understand the production issues (if any), the fundamental analyst should read through the annual report (especially the management discussion & analysis report) from the beginning to the end.

This means whenever you see impressive inventory numbers, always ensure to double check the production details as well.

### **Accounts Receivable Turnover Ratio**

Having understood the inventory turnover ratio, understanding the receivable turnover ratio should be quite easy. The receivable turnover ratio indicates how many times in a given period the company receives money/cash from its debtors and customers. Naturally a high number indicates that the company collects cash more frequently.

The formula to calculate the same is:

$$\text{Accounts Receivable Turnover Ratio} = \text{Revenue} / \text{Average Receivables}$$

From the balance sheet we know,

Trade Receivable for the FY13 : Rs.380.67 Crs

Trade Receivable for the FY14 : Rs. 452.78 Crs

Average Receivable for the FY13 : Rs.416.72

Operating Revenue for the FY14 : Rs.3437 Crs

Hence the Receivable Turnover Ratio is:

$$= 3437 / 416.72$$

= 8.24 times a year

~ 8.0 times

This means ARBL receives cash from its customers roughly about 8.24 times a year or once every month and a half.

## **Days Sales Outstanding (DSO) )/ Average Collection Period/ Day Sales in Receivables**

The days sales outstanding ratio illustrates the average cash collection period i.e the time lag between billing and collection. This calculation shows the efficiency of the company's collection department. Quicker/faster the cash is collected from the creditors, faster the cash can be used for other activities. The formula to calculate the same is:

$$\text{Days Sales outstanding} = 365 / \text{Receivable Turnover Ratio}$$

Solving this for ARBL,

$$= 365 / 8.24$$

$$= 44.29 \text{ days}$$

This means ARBL takes about 45 days from the time it raises an invoice to the time it can collect its money against the invoice.

Both Receivables Turnover and the DSO indicate the credit policy of the firm. A efficiently run company, should strike the right balance between the credit policy and the credit it extends to its customers.

---

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

1. Leverage ratios include Interest Coverage, Debt to Equity, Debt to Assets and the Financial Leverage ratios
2. The Leverage ratios mainly study the company's debt with respect to the company's ability to service the long term debt
3. Interest coverage ratio inspects the company's earnings ability (at the EBIT level) as a multiple of its finance costs
4. Debt to equity ratio measures the amount of equity capital with respect to the debt capital. Debt to equity of 1 implies equal amount of debt and equity
5. Debt to Asset ratio helps us understand the asset financing structure of the company (especially with respect to the debt)
6. The Financial Leverage ratio helps us understand the extent to which the assets are financed by the owner's equity
7. The Operating Ratios also referred to as the Activity ratios include – Fixed Assets Turnover, Working Capital turnover, Total Assets turnover, Inventory turnover, Inventory number of days, Receivable turnover and Day Sales Outstanding ratios
8. The Fixed asset turnover ratio measures the extent of the revenue generated in comparison to its investment in fixed assets

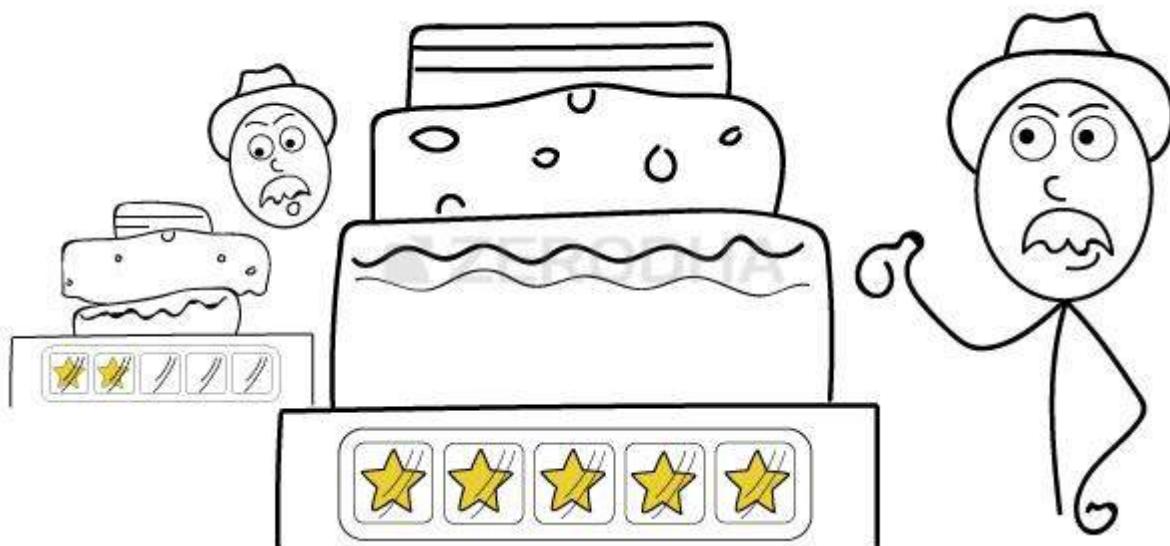
9. Working capital turnover ratio indicates how much revenue the company generates for every unit of working capital
10. Total assets turnover indicates the company's ability to generate revenues with the given amount of assets
11. Inventory turnover ratio indicates how many times the company replenishes its inventory during the year
12. Inventory number of days represents the number of days the company takes to convert its inventory to cash
  1. A high inventory turnover and therefore a low inventory number of days is a great combination
  2. However make sure this does not come at the cost of low production capacity
13. The Receivable turnover ratio indicates how many times in a given period the company receives money from its debtors and customers
14. The Days sales outstanding (DSO) ratio indicates the Average cash collection period i.e the time lag between the Billing and Collection

# The Financial Ratio Analysis (Part 3)

## 11.1 – The Valuation Ratio

Valuation in general, is the estimate of the ‘worth’ of something. In the context of investments, ‘something’ refers to the price of a stock. When making an investment decision, irrespective of how attractive the business appears, what matters finally is the valuation of the business. Valuations dictate the price you pay to acquire a business. Sometimes, a mediocre business at a ridiculously cheap valuation may be a great investment option as opposed to an exciting business with an extremely high valuation.

The valuation ratios help us develop a sense on how the stock price is valued by the market participants. These ratios help us understand the attractiveness of the stock price from an investment perspective. The point of valuation ratios is to compare the price of a stock viz a viz the benefits of owning it. Like all the other ratios we had looked at, the valuation ratios of a company should be evaluated alongside the company’s competitors.



Valuation ratios are usually computed as a ratio of the company's share price to an aspect of its financial performance. We will be looking at the following three important valuation ratios:

1. Price to Sales (P/S) Ratio
2. Price to Book Value (P/BV) Ratio and

### 3. Price to Earnings (P/E) Ratio

Continuing with the Amara Raja Batteries Limited (ARBL) example, let us implement these ratios to see how ARBL fares. The stock price of ARBL is a vital input used to calculate the valuation ratios. As I write this chapter on 28<sup>th</sup> of Oct 2014, ARBL is trading at Rs.661 per share.

We also need the total number of shares outstanding in ARBL to calculate the above ratios. If you recollect, we have calculated the same in chapter 6. The total number of shares outstanding is 17,08,12,500 or 17.081Crs

### Price to Sales (P/S) Ratio

In many cases, investors may use sales instead of earnings to value their investments. The earnings figure may not be true as some companies might be experiencing a cyclical low in their earning cycle. Additionally due to some accounting rules, a profitable company may seem to have no earnings at all, due to the huge write offs applicable to that industry. So, investors would prefer to use this ratio. This ratio compares the stock price of the company with the company's sales per share. The formula to calculate the P/S ratio is:

**Price to sales ratio = Current Share Price / Sales per Share**

Let us calculate the same for ARBL. We will take up the denominator first:

Sales per share = Total Revenues / Total number of shares

We know from ARBL's P&L statement the:

Total Revenue = Rs.3482 Crs

Number of Shares = 17.081 Crs

Sales per share = 3482 / 17.081

Therefore the Sales per share = Rs. 203.86

This means for every share outstanding, ARBL does Rs.203.86 worth of sales.

Price to Sales Ratio = 661 / 203.86

**= 3.24x or 3.24 times**

A P/S ratio of 3.24 times indicates that, for every Rs.1 of sales, the stock is valued Rs.3.24 times higher. Obviously, higher the P/S ratio, higher is the valuation of the firm. One has to compare the P/S ratio with its competitors in the industry to get a fair sense of how expensive or cheap the stock is.

Here is something that you need to remember while calculating the P/S ratio. Assume there are two companies (Company A and Company B) selling the same product. Both the companies generate a revenue of Rs.1000/-each. However, Company A retains Rs.250 as PAT and Company B retains Rs.150 as PAT. In this case, Company A has a profit margin of 25% versus Company B's which has a 15% profit margin. Hence the sales of Company A is more valuable than the sales of Company B. Hence if Company A is trading at a higher P/S, then the valuation maybe justified, simply because every rupee of sales Company A generates, a higher profit is retained.

Hence whenever you feel a particular company is trading at a higher valuation from the P/S ratio perspective, do remember to check the profit margin for cues.

### **Price to Book Value (P/BV) Ratio**

Before we understand the Price to Book Value ratio, we need to understand what the term 'Book Value' means.

Consider a situation where the company has to close down its business and liquidate all its assets. What is the minimum value the company receives upon liquidation? The answer to this lies in the "Book Value" of the firm.

The "Book Value" of a firm is simply the amount of money left on table after the company pays off its obligations. Consider the book value as the salvage value of the company. Suppose the book value of a company is Rs.200Crs, then this is the amount of money the company can expect to receive after it sells everything and settles its debts. Usually the book value is expressed on a per share basis. For example, if the book value per share is Rs.60, then Rs.60 per share is what the shareholder can expect in case the company decides to liquidate. The 'Book Value' (BV) can be calculated as follows:

**BV = [Share Capital + Reserves (excluding revaluation reserves) / Total Number of shares]**

Let us calculate the same for ARBL:

From ARBL's balance sheet we know:

Share Capital = Rs.17.1 Crs

Reserves = Rs.1345.6 Crs

Revaluation Reserves = 0

Number of shares: 17.081

Hence the Book Value per share =  $[17.1+1345.6 - 0] / 17.081$

= Rs.79.8 per share

This means if ARBL were to liquidate all its assets and pay off its debt, Rs.79.8 per shares is what the shareholders can expect.

Moving ahead, if we divide the current market price of the stock by the book value per share, we will get the price to the book value of the firm. The P/BV indicates how many times the stock is trading over and above the book value of the firm. Clearly the higher the ratio, the more expensive the stock is.

Let us calculate this for ARBL. We know:

Stock price of ARBL = Rs.661 per share

BV of ARBL = 79.8 per share

P/BV = 661/79.8

**= 8.3x or 8.3 times**

This means ARBL is trading over 8.3 times its book value.

A high ratio could indicate the firm is overvalued relative to the equity/ book value of the company. A low ratio could indicate the company is undervalued relative to the equity/ book value of the company.

### Price to Earning (P/E) Ratio

The Price to Earnings ratio is perhaps the most popular financial ratio. Everybody likes to check the P/E of a stock. Because of the popularity the P/E ratio enjoys, it is often considered the 'financial ratio superstar'.

The P/E of a stock is calculated by dividing the **current stock price** by the **Earning Per share** (EPS). Before we proceed further to understand the PE ratio, let us understand what "Earnings per Share" (EPS) stands for.

EPS measures the profitability of a company on a per share basis. For example assume a certain company with 1000 shares outstanding generates a profit of Rs.200000/. Then the earnings on a per share basis would be:

= $200000 / 1000$

= Rs.200 per share.

Hence the EPS gives us a sense of the profits generated on a per share basis. Clearly, higher the EPS, better it is for its shareholders.

If you divide the current market price with EPS we get the Price to Earnings ratio of a firm. The P/E ratio measures the willingness of the market participants to pay for

the stock, for every rupee of profit that the company generates. For example if the P/E of a certain firm is 15, then it simply means that for every unit of profit the company earns, the market participants are willing to pay 15 times. Higher the P/E, more expensive is the stock.

Let us calculate the P/E for ARBL. We know from its annual report –

PAT = Rs.367Crs

Total Number of Shares = 17.081 Crs

EPS = PAT / Total Number of shares

=  $367 / 17.081$

= Rs.21.49

Current Market Price of ARBL = 661

Hence P/E =  $661 / 21.49$

**= 30.76 times**

This means for every unit of profit generated by ARBL, the market participants are willing to pay Rs.30.76 to acquire the share.

Now assume, ARBL's price jumps to Rs.750 while the EPS remains at Rs.21.49, the new P/E would be:

=  $750 / 21.49$

= 34.9 times

While the EPS stayed flat at Rs.21.49 per share, the stock's P/E jumped. Why do you think this happened?

Clearly, the P/E Ratio jumped because of the increase in the stock price. As we know the stock price of a company increases when the expectations from the company increases.

Remember, P/E Ratio is calculated with 'earnings' in its denominator. While looking at the P/E ratio, do remember the following key points:

1. P/E indicates how expensive or cheap the stock is trading at. Never buy stocks that are trading at high valuations. I personally do not like to buy stocks that are trading beyond 25 or at the most 30 times its earnings, irrespective of the company and the sector it belongs to
2. The denominator in P/E ratio is the 'Earnings', and the earnings can be manipulated

3. Make sure the company is not changing its accounting policy too often – this is one of the ways the company tries to manipulate its earnings.
4. Pay attention to the way depreciation is treated. Provision for lesser depreciation can boost earnings
5. If the company's earnings are increasing but not its cash flows and sales, then clearly something is not right

## 11.2 – The Index Valuation

Just like a stock, the stock market indices such as the BSE Sensex and the CNX Nifty 50 have their valuations which can be measured by the P/E ,P/B and Dividend Yield ratios. The Index valuation is usually published by the stock exchanges on a daily basis. The index valuations give us a sense of how cheap or expensive the market is trading at. To calculate the CNX Nifty 50 P/E ratio, the National Stock Exchange combines the market capitalization for all the 50 stocks and divides that amount by the combined earnings for all the 50 stocks. Tracking the Index P/E ratio, gives a sense of the current state of market as perceived by the market participants. Here is the historical chart of Nifty 50 P/E ratio\* –



\* Source – Creytheon

From the P/E chart above, we can make a few important observations –

1. The peak Index valuation was 28x (early 2008), what followed this was a major crash in the Indian markets
  2. The corrections drove the valuation down to almost 11x (late 2008, early 2009). This was the lowest valuation the Indian market had witnessed in the recent past
  3. Usually the Indian Indices P/E ratio ranges between 16x to 20x, with an average of 18x
  4. As of today (2014) we are trading around 22x, which is above the average P/E ratio
- Based on these observations, the following conclusions can be made –

1. One has to be cautious while investing in stocks when the market's P/E valuations is above 22x
2. Historically the best time to invest in the markets is when the valuations are around 16x or below.

One can easily find out Index P/E valuation on a daily basis by visiting the [National Stock Exchange \(NSE\) website](#).

On NSE's home page click on Products > Indices > Historical Data > P/E, P/B & Div > Search

In the search field enter today's date and you will get the latest P/E valuation of the market. Do note, the NSE updates this information around 6:00 PM every day.

Here is a snapshot of the search result –

#### P/E, P/B & Div Yield values

Select the index you want:

Select Index:

Select a time period:  To

P/E  P/B  Div Yield  All

**Get Data**

Historical CNX NIFTY P/E, P/B & Div. Yield values			
For the period 13-11-2014 to 13-11-2014			
Date	P/E	P/B	Div Yield
13-Nov-2014	21.26	3.53	1.27

[Download file in csv format](#)

Clearly as of today (13<sup>th</sup> Nov 2014) the Indian market is trading close to the higher end of the P/E range; history suggests that we need to be cautious while taking investment decisions at this level.

---

#### Key takeaways from this chapter

1. Valuation in general, is the estimate of the 'worth' of something
2. Valuation ratios involves inputs from both the P&L statement and the Balance Sheet
3. The Price to Sales ratio compares the stock price of the company with the company's sales per share
  - o Sales per share is simply the Sales divided by the Number of shares

4. Sales of a company with a higher profit margin is more valuable in comparison to the sales of a company with lower profit margins
5. If a company is going bankrupt, the 'Book Value' of a firm is simply the amount of money left on table after the company pays off its obligations
6. Book value is usually expressed on a per share basis
7. The Price/BV indicates how many times the stock price is trading over and above the book value of the firm
8. EPS measures the profitability of a company on a per share basis
9. The P/E ratio indicates the willingness of market participants to pay for a stock, keeping the company's earnings in perspective
10. One has to be cautious about the earning manipulation while evaluating the P/E ratio
11. The Indices have a valuation which can be measured by the P/E, P/B or Dividend Yield ratio
12. It is advisable to exercise caution when the Index is trading at a valuation of 22x or above
13. A valuation gets attractive when the index is trading at 16x or below
14. The index valuations are published by NSE on their website on a daily basis

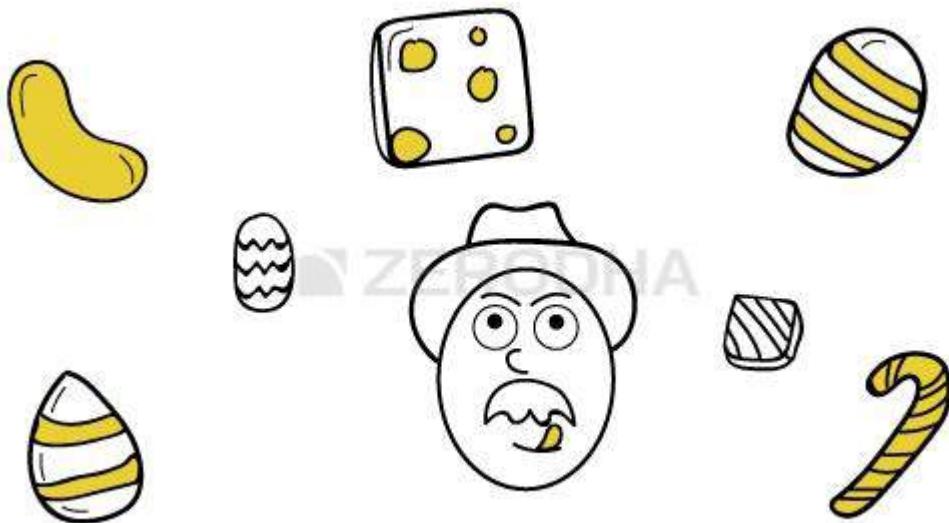
# The Investment Due Diligence

## **12.1 – Taking stock**

Over the last few chapters we understood how to read the financial statements and calculate a few important financial ratios. These chapters have laid the foundation to the final objective of this module which is – To use fundamental analysis to identify the stocks to invest. If you recollect in the earlier chapters, we had discussed about investable grade attributes. Investable grade attributes simply define the prerequisites of a company that needs to be validated before making an investment decision. Think of the investable grade attributes as a checklist based on the fundamentals of the company. A company that satisfies most of the items in the checklist, is considered investment worthy.

Now this is where few differences come up. For instance, what I consider as an investable grade attribute may not be so important to you. For example – I may pay a lot of attention to corporate governance but another investor may choose not pay so much attention to corporate governance. He could simply brush it off saying “all companies have shades of grey, as long as the numbers add up I am fine investing in the company”.

So the point is, there is no prescribed checklist. Each investor has to build his own checklist based on his investment experience. However, one has to ensure that each item on the checklist is qualified based on sound logic. Later in this chapter, I will share a checklist that I think is reasonably well curated. You could take pointers from this checklist, if you are starting out fresh. We will keep this checklist as a guideline and proceed further in this module.



## 12.2 – Generating a stock idea

Now before we proceed further and generate a checklist, we must address a more basic issue. The process of investing requires us to first select a stock that looks interesting. After selecting the stock we must subject it to the checklist to figure out if the stock matches all the checklist criteria, if it does we invest, else we look for other opportunities.

So in the first place, how do we even select a stock that looks interesting? In other words, how do we generate a list of stocks that seems interesting enough to investigate further? Well, there are a few methods to do this –

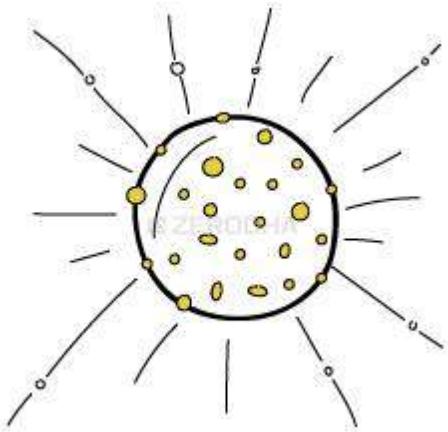
1. **General Observation** – This may sound rudimentary, but believe me this is one of the best ways to develop a stock idea. All you need to do is keep your eyes and ears open and observe the economic activity around you. Observe what people are buying and selling, see what products are being consumed, keep an eye on the neighborhood to see what people are talking about. In fact Peter Lynch, one of the most illustrious Wall Street investor advocates this method in his book “One up on Wall Street”. Personally I have used this method to pick some of my investments – PVR Cinemas Ltd (because I noticed PVR multiplexes mushrooming in the City), Cummins India Limited (because I noticed most of the buildings had a Cummins diesel generator in their premises), and Info Edge Limited (Info Edge owns naukri.com, which is probably the most preferred job portal).
2. **Stock screener** – A stock screener helps to screen for stocks based on the parameters you define and therefore helps investors perform quality stock analysis. For example you can use a stock screener to identify stocks that have a ROE of 25% along with PAT margins of 20%. A stock screener is very helpful tool when you want to shortlist a handful of investment ideas from a big basket of stocks. There are

many stock screeners available; I personally like the Google finance's stock screener and screener.in.

3. **Macro Trends** – Keeping a general tab on the macroeconomic trend is a great way of identifying good stocks. Here is an illustration of the same – As of today there is a great push for infrastructure projects in India. An obvious beneficiary of this push would be the cement companies operating in India. Hence, I would look through all the cement companies and apply the checklist to identify which amongst all the cement companies are well positioned to leverage this macro trend.
4. **Sectoral Trends** – This is sector specific. One needs to track sectors to identify emerging trends and companies within the sector that can benefit from it. For example the non alcoholic beverages market is a very traditional sector. Mainly, three kinds of products are sold and they are coffee, tea, and packaged water. Hence, most of the companies manufacture and sell just these three products. However there is a slight shift in the consumer taste these days – the market for energy drink is opening up and it seems to be promising. Hence the investor may want to check for companies within the sector that is best positioned to leverage this change and adapt to it.
5. **Special Situation** – This is a slightly complicated way of generating a stock idea. One has to follow companies, company related news, company events etc to generate an idea based on special situation. One example that I distinctly remember was that of Cox & Kings. You may know that Cox & Kings is one of the largest and the oldest tour operator in India. In late 2013, the company announced inclusion of Mr.Keki Mistry (from HDFC Bank) to its advisory board. Corporate India has an immense respect for him as he is known to be a very transparent and efficient business professional. A colleague of mine was convinced that Cox & Kings would benefit significantly with Mr. Keki Mistry on its board. This alone acted as a primary trigger for my colleague to investigate the stock further. Upon further research my colleague happily invested in Cox & Kings Limited. Good for my him, as I write this today I know he is sitting on a 200% gain
6. **Circle of Competence** – This is where you leverage your professional skills to identify stock ideas. This is a highly recommended technique for a newbie investor. This method requires you to identify stocks within your professional domain. For example, if you are a medical professional your circle of competence would be the healthcare industry. You will probably be a better person to understand that industry than a stock broker or an equity research analyst. All you need to do is identify which are the listed companies in this space and pick the best based on your assessment. Likewise if you are banker, you will probably know more about banks than the others do. So, leverage your circle of competence to pick your investments.

The point is that the trigger for investigating stocks may come from any source. In fact, as and when you feel a particular stock looks interesting, just add it to your list. This list over time will be your 'watch list'. A very important thing to note here is that a stock may not satisfy the checklist items at a particular time, however as the time

progresses, as business dynamics change at some point it may match up to the checklist. Hence, it is important to evaluate the stocks in your watch list from time to time.



### 12.3 – The Moat

After selecting a stock, one has to run the checklist to investigate the stock further. This is called the “Investment due diligence”. The due diligence process is very critical and one has to ensure maximum attention is paid to each and every aspect of this exercise. I will shortly present a checklist that I think is reasonable. But before that, we need to talk about ‘The Moat’.

Moat (or economic moat) is a term that was popularized by Warren Buffet. The term simply refers to the company’s competitive advantage (over its competitors). A company with a strong moat, ensures the company’s long term profits are safeguarded. Of course the company should not only have a moat, but it should also be sustainable over a long period of time. A company which possesses wider moat characteristics (such as better brand name, pricing power, and better market share) would be more sustainable, and it would be difficult for the company’s rivals to eat away its market share.

To understand moats, think of “Eicher Motors Limited”. Eicher Motors is a major Indian automobile manufacturer. It manufactures commercial vehicles along with the iconic Royal Enfield bikes. The Royal Enfield bikes enjoy a huge fan following both in India and outside India. It has a massive brand recall. Royal Enfield caters to a niche segment which is growing fast. Their bikes are not as expensive as the Harley Davidson nor are they as inexpensive as probably the TVS bikes. It would be very hard for any company to enter this space and shake up or rattle the brand loyalty that Royal Enfield enjoys. In other words, displacing Eicher Motors from this sweet spot will require massive efforts from its competitors. This is one of Eicher Motors’ moat.

There are many companies that exhibit such interesting moats. In fact true wealth creating companies have a sustainable moat as an underlying factor. Think about

Infosys – the moat was labor arbitrage between US and India, Page Industries – the moat was manufacturing and distribution license of Jockey innerwear, Prestige Industries – the moat was manufacturing and selling pressure cookers, Gruh Finance Limited – the moat was small ticket size credits disbursed to a certain market segment...so on and so forth. Hence always invest in companies which have wider economic moats.

## 12.4 – The Due Diligence

The equity research due diligence process involves the following stages –

1. Understanding the business – requires reading the annual reports
2. Application of the checklist and
3. Valuation – to estimate the intrinsic value of the business

In **stage 1** i.e **Understanding the business** we dwell deep into the business with a perspective of knowing the company inside out. We need to make a list of questions for which we need to find answers to. A good way to start would be by posing a very basic question about the company – **What business is the company involved in?**

To find the answer, we do not go to Google and search, instead look for it in the company's latest Annual Report or their website. This helps us understand what the company has to say about themselves.

When it comes to my own investing practice, I usually like to invest in companies where the competition is less and there is very little government intervention. For example, when I decided to invest in PVR Cinemas, there were only 3 listed players in that space. PVR, INOX, and Cinemax. PVR and Cinemax merged leaving just 2 listed companies in that space. However, there are a few new players who have entered this space now, hence it is time for me to re evaluate my investment thesis in PVR.

Once we are comfortable knowing the business, we move to **stage 2** i.e **application of the checklist**. At this stage we get some performance related answers. Without much ado, here is the 10 point checklist that I think is good enough for a start –

Sl No	Variable	Comment	What does it signify
1	Gross Profit Margin (GPM)	> 20%	Higher the margin, higher is the evidence of a sustainable moat

2	Revenue Growth	In line with the gross profit growth	Revenue growth should be in line with the profit growth
3	EPS	EPS should be consistent with the Net Profits	If a company is diluting its equity then it is not good for its shareholders
4	Debt Level	Company should not be highly leveraged	High debt means the company is operating on a high leverage. Plus the finance cost eats away the earnings
5	Inventory	Applicable for manufacturing companies	A growing inventory along with a growing PAT margin is a good sign. Always check the inventory number of days
6	Sales vs Receivables	Sales backed by receivables is not a great sign	This signifies that the company is just pushing its products to show revenue growth
7	Cash flow from operations	Has to be positive	If the company is not generating cash from operations then it indicates operating stress
8	Return on Equity	>25%	Higher the ROE, better it is for the investor, however make sure you check the debt levels along with this
9	Business Diversity	1 or 2 simple business lines	Avoid companies that have multiple business interests. Stick to companies that operate in 1 or 2 segments
10	Subsidiary	Not many	If there are too many subsidiaries then it could be a sign of the company siphoning off money. Be cautious while investing in such companies.

Lastly, a company could satisfy each and every point mentioned in the checklist above, but if the stock is not trading at the right price in the market, then there is no point buying the stock. So how do we know if the stock is trading at the right price or not? Well, this is what we do in **stage 3**. We need to run a **valuation exercise** on

the stock. The most popular valuation method is called the “**Discounted Cash Flow (DCF) Analysis**”.

Over the next few chapters, we will discuss the framework to go about formally researching the company. This is called “**Equity Research**”. The focus of our discussion on equity research will largely be on Stage 2 and 3, as I believe stage 1 involves reading up the annual report in a fairly detailed manner.

---

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

1. A stock idea can come from any source
  - o Circle of competence and General observation is a great way to start
2. It is advisable to have a watch list which includes stocks that look interesting
3. Once a stock is identified we should look for sustainable moats
4. The due diligence process involves understanding the business, running the checklist to understand its financial performance, and the valuation exercise
5. When it comes to understanding the business, one should be completely thorough with the business operations of the company
6. The checklist should be improvised as and when the investor gains investment experience
7. The DCF method is one of the best techniques to identify the intrinsic value of the business

# Equity Research (Part 1)

## **13.1 – What to expect?**

Having set the context in the previous chapter, we will now proceed to develop a methodology for conducting a ‘limited resource’ equity research. The reason why I call it ‘limited resource’ is because you and I as a retail investor have access to just few resources to conduct equity research. These resources are – internet, company annual report, and MS Excel. Whilst an Institution has access to human resource (analyst), access to company management, financial data base (such as Bloomberg, Reuters, Factset etc), industry reports etc. So my objective here is to demonstrate how one can understand a company and its business better with the limited resources at hand. Of course we will do this exercise keeping the end objective in perspective i.e to make a decision on whether to buy or not to buy a stock.

As mentioned in the previous chapter, we will structure the equity research process in 3 stages-

1. Understanding the Business
2. Application of the checklist
3. Intrinsic Value estimation (Valuation) to understand the fair price of the stock

Each stage mentioned above has several steps within it. One must understand that there is no shortcut to this and one must not compromise any of these steps.

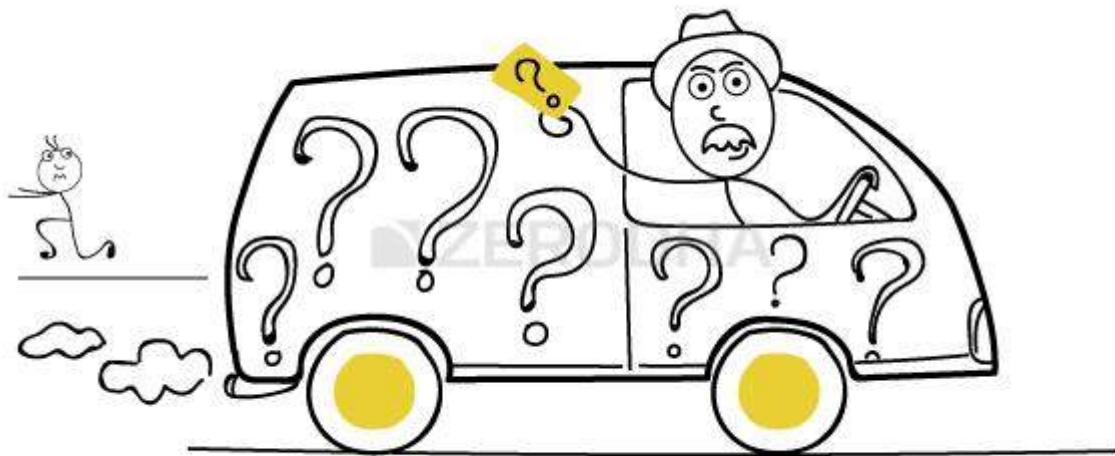
## **13.2 – Stock Price vs Business Fundamentals**

When we take up a company for research, the first step is to understand the business as much as possible. People often miss this crucial step and go directly into the stock price analysis. Well, just analyzing the stock price is great if you have a short term perspective. However for long term investments, understanding the business is essential.

Why is it important you may wonder? Well, the reason is simple, the more you know the company the higher is your conviction to stay put with the investment especially during bad times (aka bear markets). Remember during bear markets, the prices react and not the business fundamentals. Understanding the company and its business well gives you the required conviction to reason out why it makes sense to stay invested in the stock even though the market may think otherwise. They say bear markets creates value, so if you have a high conviction on the company you should consider buying into the stock during bear markets and not really selling the

stock. Needless to say, this is highly counter intuitive and it takes years of investment practice to internalize this fact.

Anyway, moving ahead the best source to get information related to the business is the company's website and its annual report. We need to study at least the last 5 year annual report to understand how the company is evolving across business cycles.



### 13.3 – Understanding the Business

As a first step towards understanding the business, we need to make a list of questions for which we need to find answers to. Do note, the answers to all these questions can be found out by reading through the company's annual report and website.

Here are a bunch of questions that I think helps us in our quest to understand the business. I have discussed the rationale behind each question.

Sl No	Question	Rational behind the question
1	What does the company do?	To get a basic understanding of the business
2	Who are its promoters? What are their backgrounds?	To know the people behind the business. A sanity check to eliminate criminal background, intense political affiliation etc

3	What do they manufacture (in case it is a manufacturing company)?	To know their products better, helps us get a sense of the product's demand supply dynamics
4	How many plants do they have and where are they located?	To get a sense of their geographic presence. Also at times their plants could be located in a prime location, and the value of such location could go off balance sheet, making the company highly undervalued
5	Are they running the plant in full capacity?	Gives us an idea on their operational abilities, demand for their products, and their positioning for future demand
6	What kind of raw material is required?	Helps us understand the dependency of the company. For example the raw material could be regulated by Govt (like Coal) or the raw material needs to be imported either of which needs further investigation
7	Who are the company's clients or end users?	By knowing the client base we can get a sense of the sales cycle and efforts required to sell the company's products
8	Who are their competitors?	Helps in knowing the competitors. Too many competing companies means margin pressure. In such a case the company has to do something innovative. Margins are higher if the company operates in – monopoly, duopoly, or oligopoly market structure
9	Who are the major shareholders of the company?	Besides the promoter and promoter group, it helps to know who else owns the shares of the company. If a highly successful investor holds the shares in the company then it could be a good sign
10	Do they plan to launch any new products?	Gives a sense on how ambitious and innovative the company is. While at the same time a company launching products outside their domain raises some red flags – is the company losing focus?

11	Do they plan to expand to different countries?	Same rational as above
12	What is the revenue mix? Which product sells the most?	Helps us understand which segment (and therefore the product) is contributing the most to revenue. This in turns helps us understand the drivers for future revenue growth
13	Do they operate under a heavy regulatory environment?	This is both good and bad – Good because it acts a natural barrier from new competition to enter the market, bad because they are limited with choices when it comes to being innovative in the industry
14	Who are their bankers, auditors?	Good to know, and to rule out the possibility of the companies association with scandalous agencies
15	How many employees do they have? Does the company have labor issues?	Gives us a sense of how labor intensive the company's operations are. Also, if the company requires a lot of people with niche skill set then this could be another red flag
16	What are the entry barriers for new participants to enter the industry?	Helps us understand how easy or difficult it is for new companies to enter the market and eat away the margins
17	Is the company manufacturing products that can be easily replicated in a country with cheap labor?	If yes, the company maybe sitting on a time bomb – think about companies manufacturing computer hardware, mobile handsets, garments etc
18	Does the company have too many subsidiaries?	If yes, you need to question why? Is it a way for the company to siphon off funds?

These questions are thought starters for understanding any company. In the process of finding answers you will automatically start posing new questions for which you will have to find answers to. It does not matter which company you are looking at, if you follow this Q&A framework I'm very confident your understanding of the company would drastically increase. This is because the Q&A process

requires you to read and dig out so much information about the company that you will start getting a sense of greater understanding of the company.

Remember, this is the first step in the equity research process. If you find red flags (or something not right about the company) while discovering the answers, I would advise you to drop researching the company further irrespective of how attractive the business looks. In case of a red flag, there is no point proceeding to stage 2 of equity research.

From my experience I can tell you that stage 1 of equity research i.e 'Understanding the Company' takes about 15 hours. After going through this process, I usually try to summarize my thoughts on a single sheet of paper which would encapsulate all the important things that I have discovered about the company. This information sheet has to be crisp and to the point. If I'm unable to achieve this, then it is a clear indication that I do not know enough about the company. Only after going through stage 1, I proceed to stage 2 of equity research, which is "Application of Checklist". Please do bear in mind the equity research stages are sequential and should follow the same order.

We will now proceed to stage 2 of equity research. The best way to understand stage 2 is by actually implementing the checklist on a company.

We have worked with Amara Raja Batteries Limited (ARBL) throughout this module, hence I guess it makes sense to go ahead and evaluate the checklist on the same company. Do remember, the company may differ but the equity research framework remains the same.

As we proceed, a word of caution at this point – the discussion going forward will mainly revolve around ARBL as we will understand this company better. The idea here is not to showcase how good or bad ARBL is but instead to illustrate a framework of what I perceive as a 'fairly adequate' equity research process.

### **13.4 – Application of checklist**

The stage 1 of equity research process helps us understand the how, what, who, and why of the business. It helps us develop a holistic view on the company. However, like they say – the proof of the pudding is in the eating; so no matter how attractive the business looks the numbers of the company should also look attractive.

The objective of the 2<sup>nd</sup> stage of equity research is to help us comprehend the numbers and actually evaluate if both the nature of the business and the financial performance of the business complement each other. If they do not complement each other then clearly the company will not qualify as investible grade.

We looked at the checklist in the previous chapter; I'll reproduce the same here for quick reference.

Sl No	Variable	Comment	What does it signify
1	Net Profit Growth	In line with the gross profit growth	Revenue growth should be in line with the profit growth
2	EPS	EPS should be consistent with the Net Profits	If a company is diluting its equity then it is not good for its shareholders
3	Gross Profit Margin (GPM)	> 20%	Higher the margin, higher is the evidence of a sustainable moat
4	Debt Level	Company should not be highly leveraged	High debt means the company is operating on a high leverage. Plus the finance cost eats away the earnings
5	Inventory	Applicable for manufacturing companies	A growing inventory along with a growing PAT margin is a good sign. Always check the inventory number of days
6	Sales vs Receivables	Sales backed by receivables is not a great sign	This signifies that the company is just pushing its products to show revenue growth
7	Cash flow from operations	Has to be positive	If the company is not generating cash from operations then it indicates operating stress
8	Return on Equity	>25%	Higher the ROE, better it is for the investor, however make sure you check the debt levels along with this

Let us go ahead and evaluate each of the checklist items on Amara Raja Batteries and see what the numbers are suggesting. To begin with we will look into the P&L items – Gross Profit, Net Profit, and EPS of the company.

### **Revenue & Pat Growth**

The first sign of a company that may qualify as investable grade is the rate at which it is growing. To evaluate the growth the company, we need to check the revenue and PAT growth. We will evaluate growth from two perspectives –

1. Year on Year growth – this will give us a sense of progress the company makes on a yearly basis. Do note, industries do go through cyclical shifts. From that perspective if a company has a flat growth, it is ok. However just make sure you check the competition as well to ensure the growth is flat industry wide.
2. Compounded Annual Growth Rate (CAGR) – The CAGR gives us a sense of how the company is evolving and growing across business cycles. A good, investable grade company is usually the first company to overcome the shifts in business cycles. This will eventually reflect in a healthy CAGR.

Personally I prefer to invest in companies that are growing (Revenue and PAT) over and above 15% on a CAGR basis.

Let us see how ARBL fares here...

	FY 09 -10	FY 10-11	FY 11-12	FY 12 -13	FY 13 – 14
Revenue (INR Crs)	1481	1769	2392	3005	3482
Revenue Growth		19.4%	35.3%	25.6%	15.9%
PAT (INR Crs)	167	148	215	287	367
PAT Growth		(11.3%)	45.2%	33.3%	27.8%

The 5 year CAGR revenue growth is 18.6% and the 5 year CAGR PAT growth is 17.01%. These are an interesting set of numbers; they qualify as a healthy set of numbers. However, we still need to evaluate the other numbers on the checklist.

### **Earnings per Share (EPS)**

The earnings per share represent the profitability on a per share basis. The EPS and PAT growing at a similar rate indicates that the company is not diluting the earnings by issuing new shares, which is good for the existing shareholders. One can think of this as a reflection of the company's management's capabilities.

FV Rs.1	FY 09 -10	FY 10-11	FY 11-12	FY 12 -13	FY 13 – 14
EPS (In INR)	19.56	17.34	12.59	16.78	21.51
Share Cap(INR Crs)	17.08	17.08	17.08	17.08	17.08
EPS Growth	-	-11.35%	- 27.39%	33.28%	28.18%

The 5 year EPS CAGR stands at 1.90% for the FY14.

### Gross Profit margins

Gross profit margins, expressed as a percentage is calculated as a -

#### Gross Profits / Net Sales

Where,

$$\text{Gross Profits} = [\text{Net Sales} - \text{Cost of Goods Sold}]$$

Cost of goods sold is the cost involved in making the finished good, we had discussed this calculation while understanding the inventory turnover ratio. Let us proceed to check how ARBL's Gross Profit margins has evolved over the years.

In INR Crs, unless indicated	FY 09-10	FY 10-11	FY 11-12	FY 12 -13	FY 13 – 14
Net Sales	1464	1757	2359	2944	3404
COGS	1014	1266	1682	2159	2450
Gross Profits	450	491	677	785	954

Gross Profit Margins	30.7%	27.9%	28.7%	26.7%	28.0%
----------------------	-------	-------	-------	-------	-------

Clearly the Gross Profit Margins (GPM) looks very impressive. The checklist mandates a minimum GPM of 20%. ARBL has a much more than the minimum GPM requirement. This implies a couple of things –

1. ARBL enjoys a premium spot in the market structure. This maybe because of the absence of competition in the sector, which enables a few companies to enjoy higher margins
2. Good operational efficiency, which in turn is a reflection of management's capabilities

### Debt level – Balance Sheet check

The first three points in the checklist were mainly related to the Profit & Loss statement of the company. We will now look through a few Balance sheet items. One of the most important line item that we need to look at on the Balance Sheet is the Debt. An increasingly high level of debt indicates a high degree of financial leverage. Growth at the cost of financial leverage is quite dangerous. Also do remember, a large debt on balance sheets means a large finance cost charge. This eats into the retained earnings of the firm.

Here is how the debt stands for ARBL –

Debt( INR Crs) Evaluation –

	FY 09-10	FY 10-11	FY 11-12	FY 12 -13	FY 13 – 14
Debt	91.19	95.04	84.07	87.17	84.28
EBIT	261	223	321	431	541
Debt/EBIT (%)	35%	42.61%	26.19%	20.22%	15.57%

The debt seems to have stabilized around 85Crs. In fact it is encouraging to see that the debt has come down in comparison to the FY 09-10. Besides checking for the interest coverage ratio (which we have discussed previously) I also like to check the debt as a percent of 'Earnings before interest and taxes' (EBIT). This just gives a quick perspective on how the company is managing its finance. We can see that the Debt/EBIT ratio has consistently reduced.

I personally think ARBL has done a good job here by managing its debt level efficiently.

### **Inventory Check**

Checking for the inventory data makes sense only if the company under consideration is a manufacturing company. Scrutinizing the inventory data helps us in multiple ways –

1. Raising inventory with raising PAT indicates are signs of a growing company
2. A stable inventory number of days indicates management's operational efficiency to some extent

Let us see how ARBL fares on the inventory data –

	FY 09-10	FY 10-11	FY 11-12	FY 12 -13	FY 13 – 14
Inventory (INR Crs)	217.6	284.7	266.6	292.9	335.0
Inventory Days	68	72	60	47	47
PAT (INR Crs)	167	148	215	287	367

The inventory number of days is more or less stable. In fact it does show some sign of a slight decline. Do note, we have discussed the calculation of the inventory number of days in the previous chapter. Both the inventory and PAT are showing a similar growth signs which is again a good sign.

### **Sales vs Receivables**

We now look at the sales number in conjunction to the receivables of the company. A sale backed by receivables is not an encouraging sign. It signifies credit sales and therefore many questions arise out of it. For instance – are the company sales personal force selling products on credit? Is the company offering attractive (but not sustainable) credit to suppliers to push sales?

	FY 09-10	FY 10-11	FY 11-12	FY 12 -13	FY 13 – 14
Net Sales(INR Crs)	1464	1758	2360	2944	3403

Receivables (INR Crs)	242.3	305.7	319.7	380.7	452.6
Receivables as a% of Net Sales	16.5%	17.4%	13.5%	12.9%	13.3%

The company has shown stability here. From the table above we can conclude a large part of their sales is not really backed by receivables, which is quite encouraging. In fact, just like the inventory number of days, the receivables as % of net sales has also showed signs of a decline, which is quite impressive.

### Cash flow from Operations

This is in fact one of the most important checks one needs to run before deciding to invest in a company. The company should generate cash flows from operations; this is in fact where the proof of the pudding lies. A company which is draining cash from operations raises some sort of red flag.

In INR Crs	FY 09-10	FY 10-11	FY 11-12	FY 12 -13	FY 13 – 14
Cash flow from Operations	214.2	86.1	298.4	335.4	278.7

The cash flow from operations though a bit volatile has remained positive throughout the last 5 years. This only means ARBL's core business operations are generating cash and therefore can be considered successful.

### Return on Equity

We have discussed at length about Return on Equity in chapter 9 of this module. I would encourage you to go through it again if you wish to refresh. Return on Equity (ROE) measures in percentage the return generated by the company keeping the shareholders equity in perspective. In a sense ROE measures how successful the promoters of the company are for having invested their own funds in the company.

Here is how ARBL's ROE has fared for the last 5 years –

In INR Crs	FY 09-10	FY 10-11	FY 11-12	FY 12 -13	FY 13 – 14
PAT	167	148	215	287	367

Shareholders' Equity	543.6	645.7	823.5	1059.8	1362.7
ROE	30.7%	22.9%	26.1%	27.1%	27.0%

These numbers are very impressive. I personally like to invest in companies that have a ROE of over 20%. Do remember, in case of ARBL the debt is quite low, hence the good set of return on equity numbers is not backed by excessive financial leverage, which is again highly desirable.

### Conclusion

Remember we are in stage 2 of equity research. I see ARBL qualifying quite well on almost all the required parameters in stage 2. Now, you as an equity research analyst have to view the output of stage 2 in conjunction with your finding from stage 1 (which deals with understanding the business). If you are able to develop a comfortable opinion (based on facts) after these 2 stages, then the business surely appears to have investable grade attributes and therefore worth investing.

However before you go out and buy the stock, you need to ensure the price is right. This is exactly what we do in stage 3 of equity research.

### Key takeways from this chapter

1. 'Limited Resource' Equity Research can be performed in 3 stages
1. Understanding the Business
2. Application of the checklist
3. Valuations
2. The objective of the stage 1 i.e understanding the business requires us to gather all information related to the business. The best way to go about this is the Q&A way
3. In the Q&A way, we begin with posting some simple and straightforward questions for which we find answers
4. By the time we finish stage 1, we should be through with all the information related to the business
5. Most of the answers required in stage 1 is present in the company's annual report and website
6. Do remember while researching the company in stage 1, if there is something not very convincing about the company, it is often a good idea to stop researching further

7. It is very important for you get convinced (based on true facts) about the company in stage 1. This is how you will develop a strong conviction to stay put during bear markets
8. Stage 2 of Equity Research requires you to evaluate the performance of the company on various counts.
9. You will proceed to stage 3 only after the company clears in stage 1 & 2.

## DCF Primer

### 14.1 – The Stock Price

In the previous chapter we understood stage 1 and stage 2 of equity research. Stage 1 dealt with understanding the business and stage 2 dealt with understanding the financial performance of the company. One can proceed to stage 3, only if he is convinced with the findings of both the earlier stages. Stage 3 deals with the stock price valuation.

An investment is considered a great investment only if a great business is bought at a great price. In fact, I would even stretch to say that it is perfectly fine to buy a mediocre business, as long as you are buying it at a great price. This only shows the significance of ‘the price’ when it comes to investing.

The objective of the next two chapters is to help you understand “the price”. The price of a stock can be estimated by a valuation technique. Valuation per say helps you determine the ‘intrinsic value’ of the company. We use a valuation technique called the **“Discounted Cash Flow (DCF)”** method to calculate the intrinsic value of the company. The intrinsic value as per the DCF method is the evaluation of the ‘perceived stock price’ of a company, keeping all the future cash flows in perspective.

The DCF model is made up of several concepts which are interwoven with one another. Naturally we need to understand each of these concepts individually and then place it in the context of DCF. In this chapter we will understand the core concept of DCF called “The Net Present Value (NPV)” and then we will proceed to understand the other concepts involved in DCF, before understanding the DCF as a whole.



## 14.2 – The future cash flow

The concept of future cash flow is the crux of the DCF model. We will understand this with the help of a simple example.

Assume Vishal is a pizza vendor who serves the best pizza's in town. His passion for baking pizzas leads him to an innovation. He invents an automatic pizza maker which automatically bakes pizzas. All he has to do is, pour the ingredients required for making a pizza in the slots provided and within 5 minutes a fresh pizza pops out. He figures out that with this machine, he can earn an annual revenue of Rs.500,000/- and the machine has a life span of 10 years.

His friend George is very impressed with Vishal's pizza machine. So much so that, George offers to buy this machine from Vishal.

Now here is a question for you – What do you think is the minimum price that George should pay Vishal to buy this machine? Well, obviously to answer this question we need to see how economically useful this machine is going to be for George. Assuming he buys this machine today (2014), over the next 10 years, the machine will earn him Rs.500,000/- each year.

Here is how George's cash flow in the future looks like –

2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000

Do note, for the sake of convenience, I have assumed the machine will start generating cash starting from 2015.

Clearly, George is going to earn Rs.50,00,000/- ( $10 \times 500,000$ ) over the next 10 years, after which the machine is worthless. One thing is clear at this stage, whatever is the cost of this machine, it cannot cost more than Rs.50,00,000/-. Think about it – Does it make sense to pay an entity a price which is more than the economic benefit it offers?

To go ahead with our calculation, assume Vishal asks George to pay "Rs.X" towards the machine. At this stage, assume George has two options – either pay Rs.X and buy the machine or invest the same Rs.X in a fixed deposit scheme which not only guarantees his capital but also pays him an interest of 8.5%. Let us assume that George decides to buy the machine instead of the fixed deposit alternative. This implies, George has foregone an opportunity to earn 8.5% risk free interest. This is the 'opportunity cost' for having decided to buy the machine.

So far, in our quest to price the automatic pizza maker we have deduced three crucial bits of information –

1. The total cash flow from the pizza maker over the next 10 years – Rs.50,00,000/-
2. Since the total cash flow is known, it also implies that the cost of the machine should be less than the total cash flow from the machine
3. The opportunity cost for buying the pizza machine is, an investment option that earns 8.5% interest

Keeping the above three points in perspective, let us move ahead. We will now focus on the cash flows. We know that George will earn Rs.500,000/- every year from the machine for the next 10 years. So think about this – George in 2014, is looking at the future –

1. How much is the Rs.500,000/- that he receives in 2016 worth in today's terms?
2. How much is the Rs.500,000/- that he receives in 2018 worth in today's terms?
3. How much is the Rs.500,000/- that he receives in 2020 worth in today's terms?
4. **To generalize, how much is the cash flow of the future worth in today's terms?**

The answer to these questions lies in the realms of the "**Time value of money**". In simpler words, if I can calculate the value of all the future cash flows from that machine in terms of today's value, then I would be in a better situation to price that machine.

Please note – in the next section we will digress/move away from the pizza problem, but we will eventually get back to it.

### 14.3 – Time Value of Money (TMV)

Time value of money plays an extremely crucial role in finance. The TMV finds its application in almost all the financial concepts. Be it discounted cash flow analysis, financial derivatives pricing, project finance, calculation of annuities etc, the time value of money is applicable. Think of the 'Time value of money' as the engine of a car, with the car itself being the "Financial World".

The concept of time value of money revolves around the fact that, the value of money does not remain the same across time. Meaning, the value of Rs.100 today is not really Rs.100, 2 years from now. Inversely, the value of Rs.100, 2 years from now is not really Rs.100 as of today. Whenever there is passage of time, there is an element of opportunity. Money has to be accounted (adjusted) for that opportunity.

If we have to evaluate, what would be the value of money that we have today sometime in the future, then we need to move the 'money today' through the future. This is called the "**Future Value (FV)**" of the money. Likewise, if we have to evaluate the value of money that we are expected to receive in the future in today's terms, then we have to move the future money back to today's terms. This is called the "**Present Value (PV)**" of money.

In both the cases, as there is a passage of time, the money has to be adjusted for the opportunity cost. This adjustment is called "Compounding" when we have to calculate the future value of money. It is called "Discounting" when we have to calculate the present value of money.

Without getting into the mathematics involved (which by the way is really simple) I will give you the formula required to calculate the FV and PV.

**Example 1** – How much is Rs.5000/- in today's terms (2014) worth five years later assuming an opportunity cost of 8.5%?

This is a case of Future Value (FV) computation, as we are trying to evaluate the future value of the money that we have today –

**Future Value = Amount \* (1+ opportunity cost rate) ^ Number of years.**

$$= 5000 * (1 + 8.5\%)^5$$

$$= 7518.3$$

This means Rs.5000 today is comparable with Rs.7518.3 after 5 years, assuming an opportunity cost of 8.5%.

**Example 2** – How much is Rs.10,000/- receivable after 6 years, worth in today's terms assuming an opportunity cost of 8.5%?

This is clearly the case of Present Value (PV) computation as we are trying to evaluate the present value of cash receivable in future in terms of today's value.

$$\text{Present Value} = \text{Amount} / (1 + \text{Discount Rate})^{\text{Number of years}}$$

$$= 10,000 / (1 + 8.5\%)^6$$

$$= 6129.5$$

This means Rs.10,000/- receivable after 6 years in future is comparable to Rs.6,129.5 in today's terms assuming a discount rate of 8.5%.

**Example 3** – If I reframe the question in the first example – How much is Rs.7518.3 receivable in 5 years worth in today's terms given an opportunity cost @ 8.5%?

We know this requires us to calculate the present value. Also, since we have done the reverse of this in example 1, we know the answer should be Rs.5000/- . Let us calculate the present value to check this –

$$= 7518.3 / (1 + 8.5\%)^5$$

$$= 5000.0$$

Assuming you are clear with the concept of time value of money, I guess we are now equipped to go back to the pizza problem.

#### 14.4 – The Net Present Value of cash flows

We are still in the process of evaluating the price of the pizza machine. We know George is entitled to receive a stream of cash flows (by virtue of owning the pizza machine) in the future. The cash flow structure is as follows

2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000

We posted this question earlier, let me repost it again – **How much is the cash flow of the future worth in today's terms?**

As we can see, the cash flow is uniformly spread across time. We need to calculate the present value of each cash flow (receivable in the future) by discounting it with the opportunity cost.

Here is a table that calculates the PV of each cash flow keeping the discount rate of 8.5% –

Year	Cash Flow (INR)	Receivable in (years)	Present Value (INR)
2015	500,000	1	460,829
2016	500,000	2	424808
2017	500,000	3	391481
2018	500,000	4	360802
2019	500,000	5	332535
2020	500,000	6	306485
2021	500,000	7	282470
2022	500,000	8	260,335
2023	500,000	9	239,946
2024	500,000	10	221151
Total	50,00,000		32,80,842

The sum of all the present values of the future cash flow is called "**The Net Present Value (NPV)**". The NPV in this case is Rs. **32,80,842** This also means, the value of all the future cash flows from the pizza machine in today's terms is Rs. **32,80,842**. So if George has to buy the pizza machine from Vishal, he has to ensure the price is Rs. **32,80,842** or lesser, but definitely not more than that and this is roughly how much the pizza machine should cost George.

Now, think about this – What if we replace the pizza machine with a company? Can we discount all future cash flows that the company earns with an intention to evaluate the company's stock price? Yes, we can and in fact this is exactly what will we do in the "Discounted Cash Flow" model.

---

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

1. A valuation model such as the DCF model helps us estimate the price of a stock
2. The DCF model is made up of several inter woven financial concepts
3. The 'Time Value of Money' is one of the most crucial concept in finance, as it finds its application in several financial concepts including the DCF method
4. The value of money cannot be treated the same across the time scale – which means the value of money in today's terms is not really the same at some point in the future
5. To compare money across time we have to 'time travel the money' after accounting for the opportunity cost
6. Future Value of money is the estimation of the value of money we have today at some point in the future
7. Present value of money is the estimation of the value of money receivable in the future in terms of today's value
8. The Net Present Value (NPV) of money is the sum of all the present values of the future cash flows

## Equity Research (Part 2)

### 15.1 – Getting started with the DCF Analysis

We discussed about “The Net Present Value (NPV)” in the previous chapter. NPV plays a very important role in the DCF valuation model. Having understood this concept, we now need to understand a few other topics that are related to DCF valuation model. In fact, we will learn more about these concepts by implementing the DCF model on Amara Raja Batteries Limited (ARBL). With this, we will conclude the 3<sup>rd</sup> stage of Equity Research i.e ‘The Valuation’.

In the previous chapter in order to evaluate the price of the pizza machine, we looked at the future cash flows from the pizza machine and discounted them back to get the present value. We added all the present value of future cash flows to get the NPV. Towards the end of the previous chapter we also toyed around with the idea –What will happen if the pizza machine is replaced by the company’s stock? Well, in that case we just need an estimate of the future cash flows from the company and we will be in a position to price the company’s stock.

But what cash flow are we talking about? And how do we forecast the future cash flow for a company?



## 15.1 – The Free Cash Flow (FCF)

The cash flow that we need to consider for the DCF Analysis is called the “**Free Cash flow (FCF)**” of the company. The free cash flow is basically the excess operating cash that the company generates after accounting for capital expenditures such as buying land, building and equipment. This is the cash that shareholders enjoy after accounting for the capital expenditures. The mark of a healthy business eventually depends on how much free cash it can generate.

Thus, the free cash is the amount of cash the company is left with after it has paid all its expenses including investments.

When the company has free cash flows, it indicates the company is a healthy company. Hence investors often look out of such companies whose share prices are undervalued but who have high or rising free cash flow, as they believe over time the disparity will disappear as the share price will soon increase.

Thus the Free cash flow helps us know if the company has generated earnings in a year or not. Hence as an investor to assess the company's true financial health, look at the free cash flow besides the earnings.

FCF for any company can be calculated easily by looking at the cash flow statement. The formula is –

**FCF = Cash from Operating Activities – Capital Expenditures**

Let us calculate the FCF for the last 3 financial years for ARBL –

Particular	2011 -12	2012 -13	2013 -14
Cash from Operating Activities (after income tax)	Rs.296.28 Crs	Rs.335.46	Rs.278.7
Capital Expenditures	Rs.86.58	Rs.72.47	Rs.330.3
<b>Free Cash Flow (FCF)</b>	<b>Rs.209.7</b>	<b>Rs.262.99</b>	<b>(Rs.51.6)</b>

Here is the snapshot of ARBL's FY14 annual report from where you can calculate the free cash flow –

Particulars	Year ended March 31, 2014	Year ended March 31, 2013
<b>I. CASH FLOW FROM OPERATING ACTIVITIES</b>		
Profit before tax from continuing operations	5,366.70	4,218.17
Add/(Less): Adjustments for		
a. Depreciation	636.69	577.20
b. Amortization	11.04	8.20
c. Impairment loss	-	75.52
d. Net income on sale of tangible fixed assets	(2.26)	(0.04)
e. Tangible fixed assets written off	24.90	44.27
f. Donation of tangible fixed asset	0.03	-
g. Interest paid on working capital facilities	0.03	0.11
h. Provisions and credit balances written back	(3.90)	(6.44)
i. Bad debts written off	32.33	4.84
j. Provision for doubtful trade receivables and advances (net)	(30.50)	(38.69)
k. Exchange gain on restatement - other than borrowings (net)	(33.81)	(13.18)
l. Provision for leave encashment	14.83	33.43
m. Provision for gratuity	6.75	8.74
n. Provision for warranty	(40.22)	156.14
o. Dividend received	(144.19)	(145.27)
p. Interest received on bank and other deposits	(137.94)	(112.29)
q. Interest on income tax	6.70	2.03
r. Provision for wealth tax	2.00	342.48
		1.83
		596.40
Operating profit before working capital changes	5,709.18	4,814.57
Add/(Less): Adjustments for working capital changes		
a. Increase in inventories	(421.50)	(262.41)
b. Increase in trade receivables	(711.71)	(571.57)
c. Increase in loans and advances	(445.72)	(421.49)
d. Increase/(decrease) in trade payables	(77.73)	490.32
e. Increase in other current liabilities	341.23	(1,315.43)
Cash generated from operations	4,393.75	4,720.78
Less: a. Income tax	1,604.42	1,365.95
b. Wealth tax	1.83	1,606.25
	0.18	1,366.13
<b>Net cash from operating activities - A</b>	<b>2,787.50</b>	<b>3,354.65</b>
<b>II. CASH FLOW FROM INVESTING ACTIVITIES</b>		
a. Purchase of tangible fixed assets	(3,303.66)	(724.78)
b. Purchase of intangible fixed assets	(10.30)	(20.97)
c. Increase in capital work-in-progress	(423.26)	(718.50)
d. Decrease/(increase) in intangible assets under development	1.69	(0.25)
e. Sale of tangible fixed assets	4.98	1.80
g. Interest received on bank and other deposits	137.94	112.29

Please note, the Net cash from operating activities is computed after adjusting for income tax. The net cash from operating activities is highlighted in green, and the capital expenditure is highlighted in red.

You may now have a fair point in your mind – When the idea is to calculate the future free cash flow, why are we calculating the historical free cash flow? Well, the reason is simple, while working on the DCF model, we need to predict the future free cash flow. The best way to predict the future free cash flow is by estimating the historical average free cash flow and then sequentially growing the free cash flow by a certain rate.. This is a standard practice in the industry.

Now, by how much do we grow the free cash flow is the next big question? Well, the growth rate you would assume should be as conservative as possible. I personally like to estimate the FCF for at least 10 years. I do this by growing the cash flow at a certain rate for the first 5 years, and then I factor in a lower rate for the next five years. If you are getting a little confused here, I would encourage you to go through the following step by step calculation for a better clarity.

### Step 1 – Estimate the average free cash flow

As the first step, I estimate the average cash flow for the last 3 years for ARBL –

$$= 209.7 + 262.99 + (51.6) / 3$$

=Rs.140.36 Crs

The reason for taking the average cash flow for the last 3 years is to ensure, we are averaging out extreme cash flows, and also accounting for the cyclical nature of the business. For example in case of ARBL, the latest year cash flow is negative at Rs.51.6 Crs. Clearly this is not a true representation of ARBL's cash flow, hence for this reason it is always advisable to take the average free cash flow figures.

### **Step 2 – Identify the growth rate**

Select a rate which you think is reasonable. This is the rate at which, the average cash flow will grow going forward. I usually prefer to grow the FCF in 2 stages. The first stage deals with the first 5 years and the 2<sup>nd</sup>stage deals with the last 5 years. Specifically with reference to ARBL, I prefer to use 18% for the first 5 years and around 10% for the next five years. If the company under consideration is a mature company, that has grown to a certain size (as in a large cap company), I would prefer to use a growth rate of 15% and 10% respectively. The idea here is to be as conservative as possible.

### **Step 3 – Estimate the future cash flows**

We know the average cash flow for 2013 -14 is Rs.140.26 Crs. At 18% growth, the cash flow for the year 2014 – 2015 is estimated to be –

$$= 140.36 * (1+18\%)$$

$$= \text{Rs. } 165.62 \text{ Crs.}$$

The free cash flow for the year 2015 – 2016 is estimated to be –

$$165.62 * (1 + 18\%)$$

$$= \text{Rs. } 195.43 \text{ Crs.}$$

So on and so forth. Here is a table that gives the detailed calculation...

### **Estimate of future cash flow –**

Sl No	Year	Growth rate assumed	Future Cash flow (INR Crs)
01	2014 – 15	18%	165.62
02	2015 – 16	18%	195.43

03	2016 – 17	18%	230.61
04	2017 – 18	18%	272.12
05	2018 – 19	18%	321.10
06	2019 – 20	10%	353.21
07	2020 – 21	10%	388.53
08	2021 – 22	10%	427.38
09	2022 – 23	10%	470.11
10	2023 – 24	10%	517.12

With this, we now have a fair estimate of the future free cash flow. How reliable are these numbers you may ask. After all, predicting the free cash flow implies we are predicting the sales, expenses, business cycles, and literally every aspect of the business. Well, the estimate of the future cash flow is just that, it is an estimate. The trick here is to be as conservative as possible while assuming the free cash flow growth rate. We have assumed 18% and 10% growth rate for the future, these are fairly conservative growth rate numbers for a well managed and growing company.

## 15.2 – The Terminal Value

We have tried to predict the future free cash flow for upto 10 years. But what would happen to the company after the 10<sup>th</sup> year? Would it cease to exist? Well, it would not. A company is expected to be a ‘going concern’ which continues to exist forever. This also means as long as the company exists, there is some amount of free cash being generated. However as companies mature, the rate at which the free cash is generated starts to diminish.

The rate at which the free cash flow grows beyond 10 years (2024 onwards) is called the “**Terminal Growth Rate**”. Usually the terminal growth rate is considered to be less than 5%. I personally like to set this rate between 3-4%, and never beyond that.

The “**Terminal Value**” is the sum of all the future free cash flow, beyond the 10<sup>th</sup> year, also called the terminal year. To calculate the terminal value we just have to take the cash flow of the 10<sup>th</sup> year and grow it at the terminal growth rate. However, the formula to do this is different as we are calculating the value literally to infinity.

**Terminal Value = FCF \* (1 + Terminal Growth Rate) / (Discount Rate – Terminal growth rate)**

Do note, the FCF used in the terminal value calculation is that of the 10<sup>th</sup> year. Let us calculate the terminal value for ARBL considering a discount rate of 9% and terminal growth rate of 3.5% :

$$= 517.12 * (1 + 3.5\%) / (9\% - 3.5\%)$$

$$= \text{Rs.}9731.25 \text{ Crs}$$

### 15.3 – The Net Present Value (NPV)

We know the future free cash flow for the next 10 years and we also know the terminal value (which is the future free cash flow of ARBL beyond the 10<sup>th</sup> year and upto infinity). We now need to find out the value of these cash flows in today's terms. As you may recall, this is the present value calculation. Once we find out the present value, we will add up these present values to estimate the net present value (NPV) of ARBL.

We will assume the discount rate at 9%.

For example in 2015 – 16 (2 years from now) ARBL is expected to receive Rs.195.29 Crs. At 9% discount rate the present value would be –

$$= 195.29 / (1+9\%)^2$$

$$= \text{Rs.}164.37 \text{ Crs}$$

So here is how the present value of the future cash flows stack up –

SI No	Year	Growth rate	Future Cash flow (INR Crs)	Present Value (INR Crs)
1	2014 – 15	18%	165.62	151.94
2	2015 – 16	18%	195.29	164.37

3	2016 – 17	18%	230.45	177.94
4	2017 – 18	18%	271.93	192.72
5	2018 – 19	18%	320.88	208.63
6	2019 – 20	10%	352.96	210.54
7	2020 – 21	10%	388.26	212.48
8	2021 – 22	10%	427.09	214.43
9	2022 – 23	10%	470.11	216.55
10	2023 – 24	10%	517.12	218.54
Net Present Value (NPV) of future free cash flows				Rs.1968.14 Crs

Along with this, we also need to calculate the net present value for the terminal value, to calculate this we simply discount the terminal value by discount rate –

$$= 9731.25 / (1+9\%)^{10}$$

$$= \text{Rs.}4110.69 \text{ Crs}$$

Therefore, the sum of the present values of the cash flows is = NPV of future free cash flows + PV of terminal value

$$= 1968.14 + 4110.69$$

$$= \text{Rs.}6078.83 \text{ Crs}$$

This means standing today and looking into the future, I expect ARBL to generate a total free cash flow of Rs.6078.83 Crs all of which would belong to the shareholders of ARBL.

## 15.4 – The Share Price

We are now at the very last step of the DCF analysis. We will now calculate the share price of ARBL based on the future free cash flow of the firm.

We now know the total free cash flow that ARBL is likely to generate. We also know the number of shares outstanding in the markets. Dividing the total free cash flow by the total number of shares would give us the per share price of ARBL.

However before doing that we need to calculate the value of 'Net Debt' from the company's balance sheet. Net debt is the current year total debt minus current year cash & cash balance.

**Net Debt = Current Year Total Debt – Cash & Cash Balance**

For ARBL this would be (based on FY14 Balance sheet) –

$$\text{Net Debt} = 75.94 - 294.5$$

$$= (\text{Rs.}218.6 \text{ Crs})$$

A negative sign indicates that the company has more cash than debt. This naturally has to be added to the total present value of free cash flows.

$$= \text{Rs.}6078.83 \text{ Crs} - (\text{Rs.}218.6 \text{ Crs})$$

$$= \text{Rs.}6297.43 \text{ Crs}$$

Dividing the above number by the total number of shares should give us the share price of the company also called the intrinsic value of the company.

**Share Price = Total Present Value of Free Cash flow / Total Number of shares**

We know from ARBL's annual report the total number of outstanding shares is 17.081 Crs. Hence the intrinsic value or the per share value is –

$$= \text{Rs.}6297.43 \text{ Crs} / 17.081 \text{ Crs}$$

**~ Rs.368 per share!**

This in fact is the final output of the DCF model.

## 15.5 – Modeling Error & the intrinsic value band

The DCF model though quite scientific is built on a bunch of assumptions. Making assumptions, especially in finance takes on an art form. You get better at it, as you progress through and gain more experience. Hence for all practical purposes, it is advisable for us to assume (yet another assumption!) that we have made a few

errors while making the intrinsic value calculation and hence we should accommodate for modeling errors.

A leeway for the modeling error simply allows us to be a flexible with the calculation of the per share value. I personally prefer to add + 10% as an upper band and - 10% as the lower band for what I perceive as the intrinsic value of the stock.

Applying that on our calculation –

$$\text{Lower intrinsic value} = 368 * (1 - 10\%) = \text{Rs. } 331$$

$$\text{Upper intrinsic value} = \text{Rs. } 405$$

Hence, instead of assuming Rs.368 as the fair value of the stock, I would now assume that the stock is fairly valued between 331 and 405. This would be the intrinsic value band.

Now keeping this value in perspective, we check the market value of the stock. Based on its current market price we conclude the following –

1. If the stock price is below the lower intrinsic value band, then we consider the stock to be undervalued, hence one should look at buying the stock
2. If the stock price is within the intrinsic value band, then the stock is considered fairly valued. While no fresh buy is advisable, one can continue to hold on to the stock if not for adding more to the existing positions
3. If the stock price is above the higher intrinsic value band, the stock is considered overvalued. The investor can either book profits at these levels or continue to stay put. But should certainly not buy at these levels.

Keeping these guidelines, we could check for the stock price of Amara Raja Batteries Limited as of today (2<sup>nd</sup> Dec 2014). Here is a snapshot from the NSE's website –

## Amara Raja Batteries Limited

Series: EQ |

Symbol: AMARAJABAT ISIN: INE885A01032 Status: Listed

Market Tracker

Securities Information

726.70

▼ -6.40 -0.87%

Pr. Close

733.10

Open

727.00

High

740.00

Low

721.80

Close

-

Trade Snapshot

Company Information

Peer Comparison

Historical Data

Print

VWAP	729.79
Face Value	1.00
Traded Volume (shares)	2,40,940
Traded Value (lacs)	1,758.36
Free Float Market Cap(Crs)	6,003.00
52 week high	794.00
52 week low	315.50
Lower Price Band	586.50
Upper Price Band	879.70

Order Book

Intra-day Chart

Stock V/s Index Chart

Quarterly Charts

Buy Qty.

Buy Price

Sell Price

Sell Qty.

21

726.55

726.75

45

10

726.35

726.80

285

35

726.10

727.00

65

50

726.05

727.25

25

187

726.00

727.30

90

21,403

Total Quantity

41,153

Security-wise Delivery Position (1DEC2014)

Value at Risk (VaR in %)

The stock is trading at Rs.726.70 per share! Way higher than the upper limit of the intrinsic value band. Clearly buying the stock at these levels implies one is buying at extremely high valuations.

### 15.6 -Spotting buying opportunities

Long term investment and activities surrounding long term investing is like a slow moving locomotive train. Active trading on the other hand is like the fast bullet train. When long term value opportunity is created, the opportunity lingers in the market for a while. It does not really disappear in a hurry. For instance, we now know that Amara Raja Batteries Limited is overvalued at current market price as it is trading way higher than the upper limit of the intrinsic value band. But the scene was totally different a year ago. Recall based on FY 2013- 2014, ARBL's intrinsic value band is between Rs. 331 and Rs.405.

Here is the chart of ARBL –



The blue highlight clearly shows that, the stock was comfortable trading within the band for almost 5 months! You could have bought the stock anytime during the year. After buying, all you had to do was stay put for the returns to roll!

In fact this is the reason why they say – Bear markets create value. The whole of last year (2013) the markets were bearish, creating valuable buying opportunities in quality stocks.

### 15.7 – Conclusion

Over the last 3 chapters, we have looked at different aspects of equity research. As you may have realized, equity research is simply the process of inspecting the company from three different perspectives (stages).

In stage 1, we looked at the qualitative aspects of the company. At this stage, we figured out who, what, when, how, and why of the company. I consider this as an extremely crucial stage of equity research. If something is not really convincing here, I do not proceed further. Remember markets are an ocean of opportunities, so do not force yourself to commit on to an opportunity that does not give you the right vibe.

I proceed to stage 2 only after I am 100% convinced with my findings in stage 1. Stage 2 is basically the application of the standard checklist, where we evaluate the performance of the company. The checklist that we have discussed is just my version, of what I think is a fairly good checklist. I would encourage you to build your own checklist, but make sure you have a reasonable logic while including each checklist item.

Assuming the company clears both stage 1 and 2 of equity research, I proceed to equity research stage 3. In stage 3, we evaluate the intrinsic value of the stock and

compare it with the market value. If the stock is trading cheaper than the intrinsic value, then the stock is considered a good buy. Else it is not.

When all the 3 stages align to your satisfaction, then you certainly would have the conviction to own the stock. Once you buy, stay put, ignore the daily volatility (that is in fact the virtue of capital markets) and let the markets take its own course.

Please note, I have included a DCF Model on ARBL, which I have built on excel. You could **download** this and use it as a calculator for other companies as well.

---

### Key takeaways from this chapter

1. The free cash flow (FCF) for the company is calculated by deducting the capital expenditures from the net cash from operating activates
2. The free cash flow tracks the money left over for the investors
3. The latest year FCF is used to forecast the future year's cash flow
4. The growth rate at which the FCF is grown has to be conservative
5. Terminal growth rate is the rate at which the company's cash flow is supposed to grow beyond the terminal year
6. The terminal value is the value of the cash flow the company generates from the terminal year upto infinity
7. The future cash flow including the terminal value has to be discounted back to today's value
8. The sum of all the discounted cash flows (including the terminal value) is the total net present value of cash flows
9. From the total net present value of cash flows, the net debt has to be adjusted. Dividing this by the total number of shares gives us the per share value of the company
10. One needs to accommodate for modeling errors by including a 10% band around the share price
11. By including a 10% leeway we create a intrinsic value band
12. Stock trading below the range is considered a good buy, while the stock price above the intrinsic value band is considered expensive
13. Wealth is created by long term ownership of undervalued stocks
14. Thus, the DCF analysis helps the investors to identify whether the current share price of the company is justified or not.

# The Finale



## 16.1 – The follies of DCF Analysis

In this concluding chapter, we will discuss a few important topics that could significantly impact the way you make your investment decisions. In the previous chapter, we learnt about the intrinsic value calculation using the Discounted Cash Flow (DCF) analysis. The DCF method is probably one of the most reliable methods available to evaluate the intrinsic value of a company's stock. However, the DCF method has its fair share of drawbacks which you need to be aware of. The DCF model is only as good as the assumptions which are fed to it. If the assumptions used are incorrect, the fair value and stock price computation could be skewed.

1. **DCF requires us to forecast** – To begin with, the DCF model requires us to predict the future cash flow and the business cycles. This is a challenge, let alone for a fundamental analyst but also for the top management of the company
2. **Highly sensitive to the Terminal Growth rate** – The DCF model is highly sensitive to the terminal growth rate. A small change in the terminal growth rate would lead to a large difference in the final output i.e. the per share value. For instance in the ARBL case, we have assumed 3.5% as the terminal growth rate. At 3.5%, the share price is Rs.368/- but if we change this to 4.0% (an increase of 50 basis points) the share price would change to Rs.394/-

3. **Constant Updates** – Once the model is built, the analyst needs to constantly modify and align the model with new data (quarterly and yearly data) that comes in. Both the inputs and the assumptions of the DCF model needs to be updated on a regular basis.
4. **Long term focus** – DCF is heavily focused on long term investing, and thus it does not offer anything to investors who have a short term focus. (i.e. 1 year investment horizon)

Also, the DCF model may make you miss out on unusual opportunities as the model are based on certain rigid parameters.

Having stated the above, the only way to overcome the drawbacks of the DCF Model is by being as conservative as possible while making the assumptions. Some guidelines for the conservative assumptions are –

1. **FCF (Free Cash Flow) growth rate** – The rate at which you grow the FCF year on year has to be around 20%. Companies can barely sustain growing their free cash flow beyond 20%. If a company is young and belongs to the high growth sector, then probably a little under 20% is justified, but no company deserves a FCF growth rate of over 20%
2. **Number of years** – This is a bit tricky, while longer the duration, the better it is. At the same time longer the duration, there would be more room for errors. I generally prefer to use a 10 year 2 stage DCF approach
3. **2 stage DCF valuation** – It is always a good practice to split the DCF analysis into 2 stages as demonstrated in the ARBL example in the previous chapter. As discussed ,In stage 1 I would grow the FCF at a certain rate, and in stage 2 I would grow the FCF at a rate lower than the one used in stage 1
4. **Terminal Growth Rate** – As I had mentioned earlier, the DCF model is highly sensitive to the terminal growth rate. Simple thumb rule here – keep it as low as possible. I personally prefer to keep it around 4% and never beyond it.

## 16.2 – Margin of Safety

Now, despite making some conservative assumptions things could still go wrong. How do you insulate yourself against that? This is where the concept of 'Margin of Safety' would arrive. The margin of safety thought process was popularized by Benjamin Graham in his seminal book titled "Intelligent Investor". The 'margin of safety' simply suggests that an investor should buy stocks only when it is available at a discount to the estimated intrinsic value calculation. Following the Margin of Safety does not imply successful investments, but would provide a buffer for errors in calculation.

Here is how I exercise the 'Margin of Safety' principle in my own investment practice. Consider the case of Amara Raja Batteries Limited; the intrinsic value estimate was around Rs.368/- per share. Further we applied a 10% modeling error to create the

intrinsic value band. The lower intrinsic value estimate was Rs.331/- we are factoring in modeling errors. The Margin of Safety advocates us to further discount the intrinsic value. I usually like to discount the intrinsic value by another 30% at least.

But why should we discount it further? Aren't we being extra conservative you may ask? Well, yes, but this is the only way you can insulate yourself from the bad assumptions and bad luck. Think about it, given all the fundamentals, if a stock looks attractive at Rs.100, then at Rs.70, you can be certain it is indeed a good bet! This is in fact what the savvy value investors always practice.

Going back to the case of ARBL –

1. Intrinsic value is Rs.368/-
2. Accounting for modeling errors @10% the lower intrinsic band value is Rs.331/-
3. Discounting it further by another 30%, in order to accommodate for the margin of safety, the intrinsic value would be around Rs.230/-
4. At 230/- I would be a buyer in this stock with great conviction

Of course, when quality stocks falls way below its intrinsic value they get picked up by value investors. Hence when the margin of safety is at play, you should consider buying it as soon as you can. As a long term investor, sweet deals like this (as in a quality stock trading below its intrinsic value) should not be missed.

Also, remember good stocks will be available at great discounts mostly in a bear market, when people are extremely pessimistic about stocks. So make sure you have sufficient cash during bear markets to go shopping!

### 16.3 – When to sell?

Throughout the module we have discussed about buying stocks. But what about selling? When do we book profits? For instance assume you bought ARBL at around Rs.250 per share. It is now trading close to Rs.730/- per share. This translates to an absolute return of 192%. A great rate of return by any yardstick (considering the return is generated in over a year's time). So does that mean you actually sell out this stock and book a profit? Well the decision to sell depends on the disruption in investible grade attributes.

**Disruption in investible grade attributes** – Remember the decision to buy the stock does not stem from the price at which the stock trades. Meaning, we do not buy ARBL just because it has declined by 15%. We buy ARBL only because it qualifies through the rigor of the "investible grade attributes". If a stock does not showcase investible grade attributes we do not buy. Therefore going by that logic, we hold on to stocks as long as the investible grade attributes stays intact.

The company can continue to showcase the same attributes for years together. The point is, as long as the attributes are intact, we stay invested in the stock. By virtue of these attributes the stock price naturally increases, thereby creating wealth for you. The moment these attributes shows signs of crumbling down, one can consider selling the stock.

#### 16.4 – How many stocks in the portfolio?

The number of stocks that you need to own in your portfolio is often debated. While some say holding many stocks help you diversify risk, others say holding far fewer helps you take concentrated bets which can potentially reap great rewards. Here is what some of the legendary investors have advised when it comes to the number of stocks in your portfolio –

Seth Kalrman – 10 to 15 stocks

Warren Buffet – 5 to 10 stocks

Ben Graham – 10 to 30 stocks

John Keynes – 2 to 3 stocks

In my own personal portfolio, I have about 13 stocks and at no point I would be comfortable owning beyond 15 stocks. While it is hard to comment on what should be the minimum number of stocks, I do believe there is no point owning a large number of stocks in your portfolio. When I say large, I have a figure of over 20 in my mind.

#### 16.5 – Final Conclusion

Over the last 16 chapters, we have learnt and discussed several topics related to the markets and fundamental analysis. Perhaps it is now the right time to wrap up and leave you with a few last points that I think are worth remembering –

1. **Be reasonable** – Markets are volatile; it is the nature of the beast. However if you have the patience to stay put, markets can reward you fairly well. When I say “reward you fairly well” I have a CAGR of about 15-18% in mind. I personally think this is a fairly decent and realistic expectation. Please don’t be swayed by abnormal returns like 50- 100% in the short term, even if it is achievable it may not be sustainable
2. **Long term approach** – I have discussed this topic in chapter 2 as to why investors need to have a long term approach. Remember, money compounds faster the longer you stay invested
3. **Look for investible grade attributes** – Look for stocks that display investible grade attributes and stay invested in them as long as these attributes last. Book profits when you think the company no longer has these attributes

4. **Respect Qualitative Research** – Character is more important than numbers. Always look at investing in companies whose promoters exhibit good character
5. **Cut the noise, apply the checklist** – No matter how much the analyst on TV/newspaper brags about a certain company don't fall prey to it. You have a checklist, just apply the same to see if it makes any sense
6. **Respect the margin of safety** – As this literally works like a safety net against bad luck
7. **IPO's** – Avoid buying into IPOs. IPOs are usually overpriced. However if you were compelled to buy into an IPO then analyze the IPO in the same 3 stage equity research methodology
8. **Continued Learning** – Understanding markets requires a lifetime effort. Always look at learning new things and exploring your knowledge base.  
I would like to leave you with 4 book recommendations that I think will help you develop a great investment mindset.

1. The Essays of Warren Buffet : Lessons for Investors & Managers
2. The Little Book that Beats the Market – By Joel Greenblatt
3. The Little Book of Valuations – By Aswath Damodaran
4. The Little Book that Builds Wealth – By Pat Dorsey

So friends, with these points I would like to close this module on Fundamental Analysis. I hope you enjoyed reading this as much as I enjoyed writing it.

