Fundamental Analysis:

FA is a holistic approach to study a business, to invest in a business for the long term (3-∞) years. At these timescales the trends that we looked for in TA become meaningless background noise and the fundamental merit of the business as a whole stands.

Skills to become a FA:

- Understanding financial statements
- Understanding the business concernign the industry it operates in
- Excel skills

Typically, 60% of your corpus should be in FA investments, while you can use 40% of your money to fool around in TA.

Mindset of an investor

There are 3 types of market participants in the world of retail investment: *Speculators, Traders and Investors*

- Speculators are people who base their market decisions on quick thinking and primitive logic, without any backtesting as such.
- Traders apply the logical thinking and backtesting to short-term trades to earn money in TA.
- Investors apply their market knowledge to the long term and use the luxury of time provided by the markets to the full potential

Investors can leverage the luxury of time because of the compounding effect of good investment in the long term

Investors will look out for investable grade attributes in a company which can be both *Qualitative and Quantitative*

The Qualtitative aspects are:

- The managements background and competency
- Business ethics
- Corporate governance
- Treatment of minority shareholders
- Share transactions
- Related party transactions
- Salaries paid to promoters
- Operator activity in stocks(higly illegal most of the time)
- Shareholders of the firm
- Political exposure of the promoters
- Promoter lifestyle

The Quantitative aspects are:

- Profitability and it's growth
- Margins and it's growth
- Earnings and it's growth
- Expenses(in wider contexts)
- Operating efficiency
- Pricing power
- Matters related to taxes
- Dividends payout
- Cash flow
- Debt(short and long term)
- Working capital management
- Asset growth
- Investments
- Financial ratios
- Other sector related indices

How to read the Annual report of the company

This is the official word of mouth of the company and is generally the source you want to look for since they have to disclose everything(or they are in deep trouble).

The media might be manipulated, or (more innocuously) might not wanna focus on thing we as FAs want to see.

Here, we're gonna take ARBL's annual report of 2013-2014(Acche din aane wale the) as the running example, but all annual reports follow roughly the same pattern of 9 sections:

- Financial Highlights
- The Management Statement
- Management Discussion and Analysis
- 10-year financial highlights
- Corporate information
- Director's Report
- Report on Corporate Governance
- Financial Section, and
- Notice

Financial Highlights: This contains the bird's eye view on how the company's financials look for the year gone by. This can be in the form of a table or pretty but heinious to scrap graphical displays. This section also makes a multi-year comparison of the operating and business metrics.

The statments here are basically extracts from the financial statements, and can also include a few financial ratios calculated by the company itself.

Few Important reports

The next 2 sections to focus on are *Management Statement/ Chairman's Message* and *Management Discussion and Analysis*. It's worht spending time here. Some *qualitative* aspects can also be found here

Management Statment: This give idea about what is going on in the top-level manager's head, about how much he is in sync with ground reality and how he positions the business.

Management Discussion and Analysis: Very important section of the AR. Most companies start by talking about the macro trends of the economy and sentiments accross the corporate world in their industry. If they have a high exposure to exports, they may also talk about the global economy.

After this, they usually talk about industry trends and what they expect the year ahead, and we can see the company's own SWOT analysis. Compare this section with the company's peers to see if the company has δ over it's peers.

Then, this dives into various aspects related to it's business and what it has in store for them. It talks about the company's performance accross various divisions, how it fares compared to previous year etc. Specific numbers are given here.

Some companies even discuss their guidelines and strategies for the year ahead across the various verticals.

After this, it includes other reports such as HR, R&D etc.

Financial Statements

3 financial statements that every company presents:

1. Profit and Loss statement
2. Balance sheet
3. Cash flow statement

These come in two forms: *Standalone and Consolidated*

To understand the difference, we need to look at ownership structures. Companies own other companies and when a parent company publishes it's AR, by including the profits and losses of its subsidiaries they form a consolidated P&L statement

- Say company A owns company B. If A loses Rs. 1000 Crores, but B makes 700 Crores, the consolidated P&L show a loss of Rs. 300 crores.

Schedules of Financial Statements

When a company reports financial statements, they usually report the full statement and then follow it up with detailed explanation, in the notes written on the table.

Understanding the P&L statement

Financial statements can be looked at from the *maker and the user* perspective.

The maker is typically with an accounting background, and his objective is to prepare transparent financial statements that best represent the company's true financial position. Typically CA's do this.

The user only needs to understand what the maker prepared, and need not conecern himself with specific invoices or receipts.

tl;dr: You don't need to be a CA to become and FA.

We saw 3 financial statements:

1. P&L statement
2. Balance sheet
3. Cash flow statement

We'll first study the P&L statement, aka. Income statement, Statement of Operations, and Statement of Earnings.

This statement reports on:

1. Revenue of company in the given period
2. Expenses incurred
3. Tax and depreciation
4. Earnings per share

You should comb through this document yourself and calcualte ratios for yourself.

Top line of the company(Revenue)

This is the first set of numbers present in the statement.

Taking a look at the headings:

Particulars	Note no.	Year ended March 31, 2014	Year ended March 31, 2013

1. All values are calculated wrt 31st March, the ending of the financial year in India
2. All currency is denominated in Millions of Rupees.
3. Particulars show all the main headings of statment, any notes associated are listed in note section/schedule.
4. The year gone by and the previous year are compared, with the more recent one on the left.

The first item on the revenue side is called the **Sale of products**

For Amar Raja (Amaron), this would be the rupee value of all the battery sales during FY14.

The next item is the excise duty, which is the tax paid by the company to the government, hence requiring revenue to be adjusted.

The revenue after adjustment is called **net sales of the company**.

The company also draws revenue from services, such as maintainance.

Then there are other operating revenues which can be in the form of sale of other products such as battery oil (say).

Finally,

$$\text{Sales} + \text{Services} + \text{Other Revenues} = \text{Total operating revenue}$$

We can check note for more details.

Usually other income should be a very small percentage of the total revenue. A large percentage of other incomes is a red flag.

Expense details

Expenses are classified according to their (function, which is also called the cost of sales method) or based on the expense's nature. The analysis will be attached in the notes.

In Amaron's case, the first item is **Cost of materials consumed**, fair enough, the raw material to make batteries.

The next items are **Purchases of stock in trade** and **Change in inventories of finished good, work-in-progress & stock-in-trade**.

Purchases of stock in trade refers to all the purchases of finished goods that company buys for conducting its business.

Change in inventories of finished good, work-in-progress & stock-in-trade refers to costs of manufacturing incurred by the company in the past, but the goods manufactured in the past were sold in current year. A negative number here indicates that the company produced more than it managed to sell. To get a sense of proportion, the company deducts the cost incurred in manufacturing the extra goods from the current year costs. The company will add these cost back in **Purchases of stock-in-trade** when they have managed to sell these products in future.

tl;dr learn more in the Financial Modelling section.

The next expense is **Employee benefits expenses**, which includes salaries paid, provident funds, and other welfare expenses. (side note, the salaries are quite small it seems)

The next expense is **Finance cost/Finance charges/Borrowing Costs**. This is essentially what you pay for borrowing funds.

The next expense id **Depreciation and Amortization**. To learn about this, we have to understand how assets are work and factored in.

Assets have a span of useful life, and once acquired, continue to provide value for a number of years. By distributing the cost of acquiring over the lifetime of the asset, the company can more truly show its growth and profitability potential. This cost is factored in as depreciation

The depreciation for non-tangible assets is called amortization.

Including this cost as depreciation does show the true profit and loss but then the P&L statement fails to account for the cashflow of the lumpsum for purchasing the asset. This cash-flow is captured in the cash-flow statement.

Other expenses may not be a red flag here, because for a distributor like Amaron, hardware stores, power and fuel etc. can all add up. However, it is still worth looking into the breakdown of other expenses.

Profit before tax

$$\text{PBT} = \text{Total revenue - Total operating expnenses - Extraordinary expenses.}$$

Extraordinary expenses are those that the company couldn't have possible seen coming.

Net profit after taxes

This is the bottom line of the P&L statement and the name pretty much explains itself.

The last line is EPS, a very sacred number which shows how much profit the company is earning per face value of ordinary share.

$$EPS = \frac{Net\ Profit}{Total\ Outstanding\ Shares}$$

Understanding the Balance Sheet

The P&L statement gives us an idea about the company's profitability, balance sheet gives us an idea about the company's assets, liabilities, and shareholder's equity.

P&L statement is standalone for the current FY. But the Balance sheet is prepared on a flow basis i.e. it has financial information on the company right from when it was started.

Assets are resources controlled by company and have an economic value in the future.

Liabilities are obligations of the company, almost exactly a loan.

In a typical balance sheet,

$$\text{Assets} = \text{Liabilities}$$

, because everything that is owned by company was purchased on a loan or the owner's capital.

Owner's capital is the difference between Assets and liabilities, Also known as Shareholder's equity or net-worth.

$$\text{Shareholder equity} = \text{Assets-Liabilities}$$

Why is shareholder's equity filed under Liabilities? To make sense of this, think of the company as an individual whose sole job is to manage company and create wealth for shareholders. Then the Shareholder equity is the money the shareholder loaned out to this individual.

Liabilities

There are 3 subsections here:

1. Shareholder's equity
2. Non-current liabilities

3. Current liabilities

To understand share capital, it's the money of the investors.

$$\text{Share capital} = \text{Face value of the stock(FV)} \times \text{Number of shares in the open market.}$$

Thus,

$$\text{Number of shares} = \frac{Share\ Capital}{FV}$$

The next item on the liability side is **Reserves and Surplus**. Reserves are usually money earmarked by the company for a specific purpose. Surplus is where the profits for the company reside.

ARBL in this case has earmarked funds accross 3 kinds of reserves:

1. Capital reserves: Usually reserved for long term projects
2. Securities premium reserve/account: This is where the premium over and above the shares' face/par value sits
3. General reserve: This is where all the profits not yet distributed to the shareholders reside. This money can be used as a buffer.

The next section deals with surplus. This holds the profit made during the year. The current year profit is added to last year closing balance of surplus. This shows that balance sheet is prepared on a flow basis.

Some of the money from surplus is transferred to the general reserve. Some more is distributed as dividends to the shareholders, and have to also pay a dividend distribution fees.

After removing these expenditures, what's left is the closing balance which will be the opening balance for the next year.

Now, shareholder's fund is the sum of share capital and reserves & surplus as this is the money that belongs to shareholder's.

Non-current liabilities

These represent the company's long term obligations, which it doesn't intend to pay of within the next 365 days of the balance sheet date, and stay on the books for a few years.

The company has 3 types of non-current liabilities:

1. Long term borrowing
2. Deferred Tax Liability
3. Long term provisions

Long term borrowings is the most important here as it represents the money the company has borrowed from various sources, and used to calculate many financial ratios.

For ARBL, most long term borrowing is in the form of 'interest-free sales tax deferment', which seems like some tax incentive which they plan to settle in 14 years.

It's generally good if a company doesn't have much debt, but the reason for no debt must be inquired. Is it because banks are refusing to lend it money or is it because it's not trying to expand its business operations?

Now, if the debt of the company was high, the finance cost would've been high too.

Deferred tax liability is a provision for future tax payments. This is because the company forsees it may have to pay additional tax in future due to the way depreciation is treated within the income tax(too much of a rabbit hole).

tl;dr deferred tax liability arises due to treatment of depreciation.

The last item is long term provisions which is usually set aside for employee benefits such as gratuity; leave encashment, provident funds etc.

Current Liabilities

Current liabilities are a company's obligations which are expected to be settled within the next 365 days.

ARBL has 4 items in current liabilities.

The first item, Short term borrowings are loans taken out for day to day operations (also called working capital requirements)

The next line is trade playable (aka account payable). These are obligations to vendors who supply to the company eg. raw materials, service centers etc.

Other current liabilities are obligations not directly related to company's operations such as employee related payables, service tax etc.

Short term provisions are quite similar to long term provisions in that they are set aside for funds such as employee benefits etc.

$$\text{Total Liability} = \text{Shareholders' Funds} + \text{Non Current Liabilities} + \text{Current Liabilities}$$

Assets

Assets are also classified as non-current and current assets.

Non Current Assets

These are further divided into two:

1. Fixed assets
2. Other line items

Fixed assets

These are items (both tangible and intangible) that the company owns which cannot be liquidated easily. Intangible assets are also considered fixed because they benefit companies over a long period of time.

All assets depreciate over their useful life. Kepping this in perspective, when the company acquires an asset, it's called the 'Gross Block'. Depreciation should be deducted from the gross block from which we can arrive at the nect block:

$$\text{Net block} = \text{Gross Block - Accumulated Depreciation}$$

Accumulated i.e. starting from incorporation.

$$\text{Current Value} = \text{Previous year value} + \text{Additions this year} - \text{Deductions this year}$$

$$\text{Total Depreciation} = \text{Previous year depreciation} + \text{Current year's depreciation} - \text{Deductions this year}$$

The next items are *Capital Work In Progress* and *Intangible Assets under Development*

CWIP includes buildings under development etc. This is mentioned in the net block section. This is work that isn't complete yet but where capital expenditure is already incurred. Once the work is done, this is moved to tangible assets.

The last line is *Intangible assets under development*. This is similar to CWIP but for intangible assets. Work such as copyright filing, brand development etc.

Other Line items

Besides fixed assets in non-current, there are other line items as well.

Non-current investments are investments made by ARBL with long term perspective. This could be anything from buying listed equity shares, minority stake in other companies, debentures, mutual funds etc.

The next item is long-term loans and advances (that ARBL makes to other companies, employees, suppliers etc.)

The last line includes 'Other Non-current assets', which are too small to be worth discussing.

Current assets

These are assets easily convertible to cash and the company forsees a situation of consuming these within the next 365 days. These are used to fund day-to-day operations and ongoing expenses.

The most common current assets are cash and cash equivalents, inventories, receivables, short term loans and sundry debtors.

For ARBL, the main assets are:

1. Inventories
2. Trade receivables
3. Cash and cash equivalents
4. Short term loans and balances
5. Others

Inventories include finished goods manufactured, raw materials in stock and goods manufactured incompletely etc. These aren't ready to be sold yet but will be within the next year. From the associated notes, we can see the bulk of this is 'Raw Materials' and 'Works in Progress'.

The next item is 'Trade recievables', which is the amount of money it is expected to receive from its distributors, and other parties.

The next item is cash and cash equivalents, the most liquid assets. Cash equivalents are highly liquid investments with a maturity rate of fewer than 3 months.

The next item is short-term loans and advances that the company has tendered and expects to be repaid in the next 365 days. These could be advance tax payments, laons to employees etc.

Other current assets are marginal, and not worth discussing.

Connecting the P&L and Balance sheet

P&L	→	Balance Sheet
Sales Revenue		Receivables and Cash Balance
Operating expenses		Inventory and Trade Payables
Depreciation & Amortisation		Accumulated Depreciation
Other income		Investments
Finance cost		Debt
PAT		Shareholder's equity

Cash Flow Statement

This statement reveals how much cash the company is actually generating. How is this different from a P&L though?

This becuase in P&L we talk about stuff such as credit and distributing the cost of acquiring an asset over time. Now that may be true, but then P&L doesn't reflect exactly how much cash or liquid money got exchanged.

Thus, to check the actual cash flows happening, we go to the Cash Flow Statement (THE SVB bank defaulted this way so this is important stuff)

Activities of a company

Company activities can be classified under 3 standard baskets:

1. *Operational Activities(OA)*: Activities related to daily core business. These include sales, marketing, manufacturing, technology upgrade, resource hiring etc.
2. *Investing Actvities(IA)*: Activities about investment that the company makes intending to reap the benefits at the later stages. These include equity shares, investing in land, property, plant and equipment, intangibles and non-current assets etc.
3. *Financing Activites(FA)*: Activities all about financial transactions og thr company such as distributing dividends, rasing fresh debt, issuing corporate bonds etc.

Now, each activity that the company undertakes has an impact on the cash balance.

By observation, we see that:

1. Whenever th liabilities of the company increase, the cash balance also increases and a decrease also works the same way. 2.Whenever the assets of the company increase, the cash balance decreases and the same happens for decreases.

Each of the 3 activities listed either produces cash of reduces cash

$$\text{Cash flow of the company} = \text{Net cash flow from operating activities} + \text{Net cash flow from investing ac}$$

.

Cash flow statement

Typically, companies split the statement into 3 segments to explicitly show how much cash the company has generated accross the 3 actvities.

A company with +ve cash flow from operating activities is always a positive sign.

Investing activities generally take up money(Assets ↑ ; Cash ↓). However, one should look if this is healthy or unhealthy

a guzzling of cash in financing activities indicate that it hasn't taken on debt and is paying back the previous loans.

Financial Ratios

Made popular by Benjamin Graham. Help us evaluate a copany against iteself and against other companies.

On it's own, these financial ratios convey quite little information.

Be on the look-out for different accounting practices here.

Financial ratios can be somewhat loosely classifies into different categories namely:

1. Profitability ratios: THey measure how well the company generates profit and hence how competitive the management is.
2. Leverage ratios: Solvency/Gearing ratios, which measures the company's long term ability to sustain it's day to day operations, and how much the company is using debt to finance growth.
3. Valuation ratios: Compare the stock price with either profitability of overall value to get a sense of how cheap or expensive the stock is trading. It compares the cost of securitty with the perks of owning it.
4. Operating ratios: aka Acitivity ratios which measure the efficiency the business can convert its assets to revenues, and thus how efficient the management is. Thus, these are also known as Management ratios.

Profitability ratios

We'll look into the following:

1. EBIDTA Margin (Operating Profit Margin)
    - EBIDTA growth (CAGR)
2. PAT Margin
    - PAT growth
3. Return on Equity (ROE)
4. Return on Asset (ROA)
5. Return on Capital Employed (ROCE)

EBITDA: Earnings before Interest Tax Depreciation & Amortization Margin

This indicates the efficiency of the management and the company model. EBITDA Margin tells us how profitable (in percentage terms) the company is at an operating level. It always makes sense to compare the company's EBITDA margin versus its competitor to get a sense of the management's efficiency in terms of managing their expense.

$$\text{EBITDA} = [\text{Operating Revenus}] - [\text{Operating Expense}] = [\text{Total Revenue- Other Income}] - [\text{Total Expens}$$

$$\text{EBITDA Margin} = \frac{EBITDA}{Operating\ Revenue}$$

$$\text{EBIDTA CAGR} = (\left(\frac{EBITDA_{t=n}}{EBITDA_{t=0}}\right)^{\frac{1}{n}} - 1) \times 100\%$$

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, depreciation and finance costs aren't considered, and taxes aren't considered. All these are taken in when calculating PAT Margin

$$\text{PAT Margin} = \frac{PAT}{Total\ Revenue}$$

This is explicitly stated in ARs.

Return on Equity

It lets the shareholder assess the return he earns per unit of capital invested. In other words, RoE shows the efficiency in terms of generating profits to shareholders. The RoE of top Indian companies hovers around 14-16%.

This ratio is also compared with other peers and over time.

Also note, if the RoE is high, 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.

$$RoE = \frac{Net\ Profit}{Shareholder\ Equity} \times 100$$

RoE is generally good but it suffers from a drawabck that a higher amount of debt instead of shareholder equity can screw it over. High RoE is good but not at the cost of high debt, because the finance cost increases drastically. To check the effect of debt, we can use a technique called **DuPont Model** or **DuPont Identity**(after the eponymous company)

The RoE as per DuPont identity can be calculated as:

$$RoE = \frac{Net\ Profit}{Net\ Sales} \times \frac{Net\ Sales}{Avg.\ Total\ Assets} \times \frac{Avg.\ Total\ Assets}{Shareholder\ equity} \times 100\%$$

The end number comes out to the same, but calculating the individual fractions. Let's take a look at them:

- $\text{Net Profit Margin} = \frac{Net\ Profits}{Net\ Sales} \times 100\%$: This is the first part and it expresses the company's ability to generate profits. This is the same as the PAT Margin. A low Net Profit margin would indicate higher costs and/or increased competition.
- $\text{Asset Turnover} = \frac{Net\ Sales}{Avg.\ Total\ Assets}$: This is the ratio of efficiency that indicates how efficiently the company is using assets to generate revenue. Higher the ratio, better the efficiency. A lower ratio could indicate management or production problems. The unit is yr^{-1}
- $\text{Financial Leverage} = \frac{Avg.\ Total\ Assets}{Shareholder\ Equity}$: This answers the question, 'how much times the assets are worth compared to the shareholder money?'. For eg. If the financial leverage is 4, this means that the company has 4 Rs, of assets for every 1 Rs. invested. Leverage typically in finance is about a small sum of money controlling a larger sum. A high leverage, along with increased amounts of debt, make it a risky investment. The unit is yr^{-1}

Note: The Avg. Total assets are the average of the assets of previous FY(2013) and the FY we are seeing (2014). In the same vein, we have to take the average shareholder equity since it changes from year to year.

$$\text{RoE} = \text{Net profit margin} \times \text{Asset turnover} \times \text{Financial Leverage}$$

A quick, less accurate way to calculate RoE is simply:

$$\text{RoE} = \frac{Net\ Sales}{Avg.\ Shareholder\ equity} \times 100\%$$

Return on Asset

This calculates the effectiveness to create wealth from assets. A good management will limit investment into non-performing assets. Hence, again a measure of efficiency. Higer the RoA, better it is.

$$\text{RoA} = \frac{\text{Net income} + \text{Interest} \times (\text{1- Tax Rate})}{Total\ Average\ Assets} \times 100\%$$

The $\text{Interest} \times (\text{1-Tax Rate})$ term is the fact that those lending debt to the company are also in a sense shareholder and are thus gettig returns. The company also benefits in terms of paying lesser taxes when interest is paid out. This is called a 'tax shield'.

Return on Capital Employed

RoCE indicates the company's profitability, taking into consideration the overall capital it employs. Overall capital includes both equity and debt (both long term and short term).

$$\text{RoCE} = \frac{\text{Profit before interests and Taxes}}{\text{Overall Capital Employed}}$$

$$\text{Overall Equity} = \text{Short term debt} + \text{Long term Debt} + \text{Equity}$$

Leverage ratios

We'll be looking for the following leverage ratios:

1. Interest Coverage ratio

2. Debt to Equity ratio
3. Debt to Asset ratio
4. Financial Leverage ratio

ARBL doesn't have a lot of debt on its books. Hence let's take a running example of JISL here.

Interest Coverage Ratio

aka debt service ratio. This helps us understand how much the company is earning relative to the interest burden. For eg. if a company has interest burden of 100 vs income of 400, then we know that it has sufficient funds to service its debt. However, a lower interest coverage ratio could mean higher debt burden and a greater risk of default.

$$\text{Interest Coverage Ratio} = \frac{EBITDA - Depreciation\ \&\ Amortization}{Interest\ Payment}$$

$$= \frac{\text{Revenue - Expenses - Depreciation \& Amortization}}{\text{Interest payments}}$$

Debt to Equity Ratio

It is what the name suggests. Higher ratio, indicates higher leverage and thus risky investment. Value less than 1 suggests finances ativity primarily through equity. Debt is both short term and long term.

Debt to Asset ratio

Helps understand asset financing pattern, and how much of asset acquisition is financed through debt. Again, name suggests calculation. Once again, higher ratio, higher leverage, higher risk.

Financial Leverage ratio

(discussed in the RoE section). Gives us an idea about what extent the assets are supported by equity.

$$\text{Financial Leverage ratio} = \frac{\text{Avg total assets}}{\text{Average total equity}}$$

Higher the ratio, higher the leverage, riskier the investment.

Operating ratios

also called Activity ratios or (Asset) Management Ratios, indicate efficiency of the company's operational activity, and to some degree, the management efficiency as well.

The ratios we're discussing are:

1. Fixed Assets Turnover Ratio
2. Working Capital Turnover Ratio
3. Total Assets Turnover Ratio
4. Inventor Turnover Ratio
5. Inventory Number of Days
6. Receivable Turnover Ratio

7. Days Sales Outstanding (DSO)

The above ratios combine the data from both P&L and Balance sheet.

To get a sense of how good or bad these ratios, one must compare them with the peers or over a time period.

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, the more efficient the company at managing its fixed assets.

$$\text{Fixed Asset turnover} = \frac{Operating\ Revenue}{Total\ average\ asset}$$

The assets should include accumulated depreciation (i.e. we take the net block) and also the capital work in progress.

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, decreasing the ratio.

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 is money required to run day-to-dat operations. The company needs certain types of assets for this. Typically these are inventories, receivables, cash etc. which 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.

$$\text{Working Capital} = \text{Current Assets - Current Liabilities}$$

If working capital is +ve, it means it has a surplus and can easily manage day-to-day operations. However, if this is -ve, then the company has a deficit and usually the company then seeks a working capital loan from bankers.

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. A ratio of 4 for example that the company generates Rs. 4 in revenue for every Rs. 1 of working capital. Higher the number, better it is, since the company is generating more in sales than what is costing to fund them. This number should also be compared with its peers to gain deeper insights.

$$\text{Working Capital Turnover} = \frac{\text{Revenue}}{\text{Average Working Capital}}$$

Total Assets Turnover

Straightforward. Indicates the company's ability to generate revenue with the given amount of assets. Assets include both fixed and current assets. A higher total asset turnover ratio compared to its historical data and

competitor data means the company is using assets well to generate more sales.

$$\text{Total Asset Turnover} = \frac{\text{Operating Revenue}}{\text{Average total assets}}$$

Inventory Turnover ratio

Inventory refers to the finished goods that the 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 the 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'.

Finally, if the product is really popular the inventory turnover would be high. This is exactly what the 'Inventory Turnover Ratio' indicates.

$$\text{Inventory Turnover} = \frac{\text{Costs of goods sold}}{\text{Average inventory value}}$$

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. The unit is yr^{-1}

Again compare this with the company's peers.

Inventory Number of days

Average time for company to convert inventory into cash. Lesser the number, the better.

$$\text{Inventory Number of days} = \frac{365}{\text{Inventory turnover}}$$

Again, compare with peers and over time.

A high turnover rate may indicate really well management or a very popular product without a high production capacity. In the latter case, some doubts arise:

1. Why is the company not able to ramp up their production?
2. Are they short on funds?
3. If they are, why can't they seek a loan?
4. Are banks afraid of managers' track record?
5. If funds aren't the problem, why can't the company increase production?
6. Is sourcing raw material difficult or regulated? Is the business not scalable then?

If anyone of these questions have a yes as an answer, then that's a red flag, and you might not wanna invest long term here. Thus whenever you see impressive inventory numbers, always ensure to double check the production details as well.

Accounts Receivable Turnover ratio

This indicates how many times in a given period the company receives money/cash from its debtors and customers. High number indicates the company collects cash very frequently.

$$\text{Accounts Receivable Turnover ratio} = \frac{Revenue}{Average\ Receivables}$$

Day Sales Outstanding (DSO)/ Average Collection Period / Day Sales in Receivables

The DSO illustrates the average cash collection period i.e. time lag between billing and collection. This figure shows efficiency of the collection department.Lower the DSO, higher the collection rate, faster the cash can be used for other activities.

$$\text{DSO} = \frac{365}{\text{Accounts receivable turnover ratio}}$$

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.

Valuation Ratios

Valuation is essentially the worth of the stock under study. When making an investment decision, irrespective of how attractive the business appears, what matters finally is the business valuation. Valuations dictate the price at which you acquire the business. Sometimes a mediocre business with a ridiculously cheap valuation is better than an exciting business with extremely high valuation.

The valuation ratios help us develop a sense of how the market participants value the stock price. 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, a company's valuation ratios should be evaluated alongside the company's competitors.

We'll discuss 3 ratios:

1. Price to sales (P/S) ratio
2. Price to book value (P/BV) ratio
3. Price to Earnings (P/E) ratio

Price to sales ratio

In many cases, investors prefer sales over earnings to value investments. The earnings figure may not be true as some companies might be experiencing cyclical lows in their earning cycle. Additionally, accounting tricks can make a very profitable company look like it has no earnings due to the huge writeoffs the industry may get.

$$\text{P/S ratio} = \frac{\text{Current Share Price}}{\text{Sales per share}}$$

A higher P/S denotes the stock is pricey but not necessarily bad. One has to compare this with peers and over time. A higher P/S ratio is justified for a company making large profits. Always check the profit side of the equation when calculating things.

Price to Book Value ratio

Book Value is 'the value on the books', i.e. the total money we get if we liquidate the company, basically the salvage value. This book value is also usually expressed on a per share basis.

$$\text{BV} = \frac{\text{Share Capital} + \text{Reserves(excluding revaluation reserves)}}{\text{Total number of shares}}$$

$$\text{P/BV ratio} = \frac{\text{Current Share Price}}{\text{BV}}$$

A high ratio indicates a company is overvalued relative to what it has(most companies are because companies fundamentally add value to the economy than being a zero sum bodies). A company with $P/BV < 1$ indicates that it's undervalued and is run by a terrible management.

Price to Earnings Ratio

This is the most popular financial ratio, and everyone is obsessed with it.

$$\text{P/E ratio} = \frac{\text{Current Stock Price}}{\text{Earnings per share}}$$

Earnings per share or EPS calculates the profitability on a per share basis.

$$\text{EPS} = \frac{\text{Net profit}}{\text{No. of outstanding shares}}$$

A higher EPS is obviously better for the investors.

Now, P/E ratio gives the willingness of the market participants to pay for the stock, for every rupee of profit it generates. Say, the P/E is 30, it means that people are willing to pay Rs. 30 for every 1 Rs. it earns. Higher the P/E, the more expensive it is.

Some notes by the author:

1. P/E indicates how expensive or cheap the stock is trading at. Never buy stocks that are trading at high valuations. Personally, I wouldn't say I 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 way 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, something is clearly not right

Index Valuation

Like a particular stock, the market indices such as BSE Sensex and CNX Nifty 50 also have valuations measured by the P/E, P/BV and Yield ratio(dividends).

For an example, to calculate PE for Nifty 50, the NSE combines the market cap for all 50 stocks and divides that amount by the combined earnings of all 50 stocks.

Lookign at the historical avrage of Nifty 50's P/E ratio, it lies between 16x to 22x.

Thus:

1. One has to be cautious while investing in stocks when the market's P/E valuations are above 22x
2. Historically the best time to invest in the markets is when the valuations are around 16x or below.

The Investment Due Diligence

We talked about investable grade attributes at the start and developed tools to understand them subsequently. Think of these attributes as a checklist. A company that checks most boxes is considered investment worthy.

However, this is where subjectivity creeps up and every investor has to form their own checklist based on their sound logic.

Generating a stock idea

In investing, we first look at a stock that looks interesting, and then subject it to the checklist, and if it satisfies, we invest. There are a few methods to identify stocks:

1. *General Observation*: aka Intuition. This alone can take you quite far but you have to hone it. Keep your eyes and ears open and observe the economy and the relevant industries.
2. *Stock screener*: Helps to screen for stocks based on defined paramters by the user and thus helps investors perform quality stock analysis. You can just put the parameters in and the relevant stocks pop right out. eg. Google Finance
3. *Macro trends*: Keeping a tav on general macroeconomc trends is a great way of ifentifying good stocks. Eg. Software companies are gonna form huge part of digital India so makes sense to invest in those.
4. *Sectoral trends*: Sector-specific. Track sectors for identifying emerging trends and benefit from it. Eg. AI companies are all the rage in new tech so invest in those.
5. *Special situations*: Follow the news and generate investing ideas based on special situations coming in. For eg., the time when Steve Jobs came back to control Apple was a special situation in Apple's corporate history and people invested in that time got huge gains out of it. On a darker note, the invasion of Iraq meant more sales for Boeing, and so investing there might be a good idea.
6. *Circle of competence*: Leverage your profession al skills to identify stock ideas. Identify stocks within your professional domain. For example, a banker may have a better idea about which banks are well run and thus will be better able to analyse which banks are well run.

The overarching point is that the impetus to invest can come from anywhere and you should keep checking out new stocks to put into your watch list. It's also important to keep checking your stock list from time to time as some stocks may stray away from the checklist and other stocks might start satisfying it

The Moat

After selecting a stock one has to run the checklist to investigate the stock further. This is called 'investment due diligence'. The due diligence process is critical to ensure maximum attention is paid to every aspect of this exercise. But before the checklist we need to talk about 'The Moat'

'The Moat' as a term was popularised by Warren Buffet and refers to the company's competitive advantage over its competitors. A company with a strong moat ensures that its profits are safeguarded in the long term. Of course, the company should not only have a moat, but it should also be sustainable over a long period of time. A company that possesses wider moat characteristics (such as **better brand name, pricing power, and**

better market share) would be more sustainable. It would be difficult for the company's rivals to eat away its market share. eg. Royal Enfield, Apple.

Many companies exhibit such interesting moats. In fact, true wealth-creating companies have a sustainable moat as an underlying factor. Think about Infosys – the moat was labour 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.

Due Diligence

The equity research due diligence process involves the following stages:

1. Understanding the business: Reading the Annual Reports
2. Application of the checklist
3. Valuation: To estimate the intrinsic value of the business.

In the first stage, we understand what business the company is involved in, not by doing a Google search, but by reading the annual report and looking at revenue sources.

Each investor should have his or her own investing practice. The author usually likes to invest in companies where market competition is less and there is little government intervention.

Then we move on to stage 2, applying the checklist. At this stage, a beginner's checklist can look something like this.

S no.	Variable	Comment	Significance
1.	Gross Profit Margin	$> 20\%$	Higher the margin, higher the evidence of sustainable moat
2.	Revenue Growth	In line with gross profit growth	Revenue growth should be in line with the profit growth
3.	EPS	EPS should be in line with Net profits	If a company is diluting its equity, it's not good for its shareholders
4.	Debt Level	The company should not be highly leveraged	High debt means the company is operating on high leverage. Plus, the finance costs eats away the earnings
5.	Inventory	Applicable for manufacturing companies	A growing inventory along with growing PAT margin is a good sign. Always check the inventory number of days
6.	Sales vs Receivables	Sales backed by receivables aren't 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 a company isn't 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	It's better now as a novice to stick to business with 1 or 2 clearly defined segments
10.	Subsidiary	Not many	If there are too many subsidiaries, it could sign the company siphoning off money. Be cautious while investing in such companies.

Now, a company may satisfy all the criteria on the checklist and still not be worthy of investment if the stock is ridiculously overpriced. Thus, to determine this, we need to run a valuation of the stock in stage 3. The most popular method is the **Discount Cash Flow (DCF) analysis**.

We'll now discuss the framework to go about formally researching company. This is called '*Equity Research*'.

Equity Research (Part 1)

We will now 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 a few resources to conduct equity research. These resources are – internet, company annual report, and a spreadsheet editor, whereas something like an institutional investor has access to dedicated human resources, access to company management, financial databases (such as Bloomberg Reports, Reuters, Factset etc.), industry reports etc. So

our objective here is to understand the company with the 3 resources at hand. We'll also keep in mind the end goal, i.e. whether to buy a stock or not.

We'll structure the equity research in 3 phases:

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 has several steps within it. There are no shortuts here. If you come up with one, say goodbye to your money.

Stock price vs Business Fundamentals

We must always analyse the business fundamentals before jumping to stock price analysis, since good research with positive conclusions into a company gives faith to stay invested during the bad times.

We need to study at least the last 5-year annual report to understand how it is evolving across business cycles.

In the first stage, we need to make a list of questions that we need to find answers to.

Here's a list of questions for the beginner investor

Sl no.	Question	Rationale
1.	What does the company do?	To get a basic understanding of their business
2.	Who are its promoters? What are their backgrounds?	To know the people behind the business. Sanity check to eliminate criminal backgrounds, intense political affiliation etc.
3.	If they are a manufacturing company, what do they manufacture?	To get to know the product more and understand the demand and supply dynamics
4.	How many plants do they have and where are they located?	To get a sense of geographic presence. At times, the plants could be in a prime location, and the value of this location could go off the balance sheet, making the company highly undervalued
5.	Are they running the plant at full capacity?	Give us idea about operational activities, demand for products and positioning for future demand
6.	What kind of raw material is required	Helps us understand the dependency of the company. For example, a raw material regulated by government or needs to be imported needs further investigation
7.	Who are the end-users?	By knowing the lient base we can get a sense of the sales cycle and efforts required to sell products
8.	Who are their competitors	Helps in knowing the competitors. Too many competing companies means margin pressure. This isn't inherently bad but inexperienced investors should stay clear for now. The company has to do something innovative in this market. Companies in monopoly, duopolies and oligopolies are easier to see and invest in
9.	Who are the major shareholders of the company?	Besides the promoter and promoter group, it helps to know who else owns the company’s shares. 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 of 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 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(cough, Amazon, cough)
13.	Do they operate under a heavy regulatory environment?	This is both good and bad – Good (for the investor) 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

Sl no.	Question	Rationale
14.	Who are their bankers, auditors?	Good to know, and to rule out the possibility of the companies associated with scandalous agencies(Enron)
15.	How many employees do they have? Does the company have labour issues?	Gives us a sense of how labour-intensive the company's operations are. Also, if the company requires a lot of people with a niche skillset, then this could be another red flag(TSMC, but again advanced investors may decide otherwise)
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 labour?	If yes, the company may be sitting on a time bomb – think about companies manufacturing computer hardware, mobile handsets, garments etc. or companies selling specialised hardware for office use in the 90s
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 finding answers, one will automatically start posting new questions for which you will have to find answers to. The knowledge of the company will also exponentially increase. This is because the Q&A process requires one to read and dig out so much information about the company that one will start getting a greater understanding of the company.

If red flags are found at this stage, no matter how attractive or exciting the company looks, drop it. No stage 2 for this company. This stage takes about 15 hours. After this time, you should have concise and to the point knowledge jotted down. Try to achieve this state.

Now, stage 2 is the application of checklist. And we'll actially implement it on ARBL

Application of checklist

We already saw a checklist above, so let's see it again:

S no.	Variable	Comment	Significance
1.	Gross Profit Margin	$> 20\%$	Higher the margin, higher the evidence of sustainable moat
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10.	Subsidiary	Not many	If there are too many subsidiaries, it could sign the company siphoning off money. Be cautious while investing in such companies.

Revenue and PAT growth

The first sign of a company that may qualify as the investable grade is the rate at which it is growing. To evaluate the growth of the company, we need to check the revenue and PAT growth. We evaluate growth from two perspectives:

1. YoY growth:This will give us a sense of progress the company makes every year. 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 and ensure the growth is a flat industry-wide.
2. CAGR growth: 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.

A CAGR above 15% is very healthy and investable.

Earnings per share

We went through this above. The EPS and PAT growing at a similar rate indicate that the company does not dilute 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.

Gross profit margin

$$\text{Gross profit margin} = \frac{\text{Gross profits}}{\text{Net sales}} = \frac{\text{Net sales} - \text{Cost of Goods sold}}{\text{Net Sales}}$$

A good GPM indicates the following:

1. The Company enjoys a premium spot in the market structure. This may be because of absence of competition in the sector.
2. Good operational efficiency, which in turns shines a positive light on the management

Debt Level - Balance Sheet Check

Up until now, we were only looking at things from the P&L statement. But now we switch to balance sheets. One of the most important lines in the balance sheet is the debt level. An increasingly high level of debt implies high leverage and thus risky investment. A large debt also means high financing cost. This eats into retained earnings.

It is also good to check the debt level against EBIT. This gives a quick perspective on how the company is managing its finances. A lower level is good.

Inventory Check

This only makes sense if it's a manufacturing company. Analysing this helps us in many different ways:

1. Raising Inventory along with rising PAT indicates signs of a growing company.
2. A stable Inventory number of days indicate management efficiency to some extent.

Sales vs Receivables

A sale backed by receivables isn't a good sign. It signifies credit sales and thus many questions arise: Do salespeople force people to buy on credit? Is the company offering unsustainably attractive credit to suppliers to push sales?

Cash flow from Operations

This is one of the most important checks: A company should generate cash from it's operations. A company burning cash, no matter how much it receives in receivables, is a red flag.

Return on Equity

we discussed it a lot before. But essentially a high RoE is good but not at the cost of high debt.

Conclusion

ARBL has passed (go check the calculations on the website). Now, a company that passes stage 1 and satisfies all checks in stage 2 is almost certainly worth investing, if the stock isn't very expensive.

Thus, to check if the price is right, we conduct stage 3.

Discounted Cash Flow (DCF) (Primer)

The stock price

An investment is considered great only when a great business is bought at a great price. In fact, sometimes it's desirable to buy a mediocre business at a cheap price.

We'll learn about a valuation technique called Discounted Cash Flow (DCF) method to calculate the intrinsic value of the company. The intrinsic value as per the DCF method is evaluating 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.

Future Cash Flow

This is the crux of the DCF model. Let's understand with the help of a model.

Person A makes a pizza oven that is gonna create Rs. R in revenue for the next N years. So the total revenue the oven will generate in it's entire life would be Rs. NR. So the intrinsic value of the oven can not be more than Rs. NR, Suppose Person B buys the oven for Rs. X. At this point Y would have had two options(opportunity cost analysis):

1. Buy at Rs. X
2. Invest X in a FD at a risk-free interest rate of r.

At this point we know that:

1. The total cash flow from the oven is Rs. NR
2. The price $X < NR$
3. The opportunity cost is an investment that earns $r\%$ interest.

We now have to think about the perspective of person B:

1. How much is Rs. R in T+1 years?
2. How much is Rs. R in T+2 years?
3. How much is Rs. R in T+3 years?

So on and so forth. To generalise, how much is cash flow of future worth today? In other words, we're asking the **Time Value of Money**

Time Value of Money(TMV)

TMV finds its use in almost all financial concepts. Be it discounted cash flow analysis, financial derivatives pricing, project finance, calculation of annuities etc., the time value of money is applicable.

The concept of the time value of money revolves around the fact that 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 the passage of time, there is an element of opportunity. Money has to be accounted (adjusted) for that opportunity.

Thus, we evaluate the money of today moved into the future. This is called the **Future Value(FV)** of the money. Likewise, if we evaluate future money in today's terms, it's called the **Present Value(PV)** of money.

Money, when passage of time occurs, has to be evaluated for the opportunity cost. This adjustment is called 'Compounding' when we calculate FV and 'Discounting' when we calculate PV.

It's basically the Compound Interest problem to calculate money once we know the parameters.

$$FV_X = X(1 + \frac{r}{100})^n$$

where n is the number of years and r is the opportunity cost rate and X os the amount today.

$$PV_X = \frac{X}{(1 + \frac{r}{100})^n}$$

where X is the amount we are receiving in the future.

Net Present Value of Cash Flows (NPV)

Let's calculate the future value of money for the oven:

Value of R in T+1= $\frac{R}{(1+\frac{r}{100})}$

Value of R in T+2= $\frac{R}{(1+\frac{r}{100})^2}$

...

Value of R in T+n= $\frac{R}{(1+\frac{r}{100})^n}$

Thus the total value of the cash Flow generated = $R(\frac{1}{(1+\frac{r}{100})} + \frac{1}{(1+\frac{r}{100})^2} + \ldots + \frac{1}{(1+\frac{r}{100})^n})$

$$= \frac{100R}{r}\left(1 - \left(\frac{1}{(1 + \frac{r}{100})^n}\right)\right) = F$$

So we have to ensure that $X < F$ and X should be roughly around what he pays now.

This is exactly how we are gonna account cash flows for the company in the DCF model and then evaluate the stock price.

Equity Research (Part 2)

We now reach stage 3 of Equity Research, i.e. valuation.

How do we forecast the future cash flow of the company so that we can do the TMV analysis?

The Free Cash Flow (FCF)

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, free cash is the amount of cash the company is left with after paying all its expenses, including investments.

When the company has free cash flows, it indicates the company is healthy. Hence investors often look out for 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

The FCF helps us know if company has generated earnings in a year or not, and helps us assess the true financial health of the company besides the earnings.

$$\text{FCF} = \text{Cash from Operating Activities} - \text{Capital Expenditures}$$

the Net cash from operating activities is computed after adjusting for income tax

the Net cash from operating activities is computed after adjusting for income tax. We are estimating the future cash flow after looking at the historical cash flows and then sequentially growing the cash flow at a certain rate. This is a standard modeling practice in the industry.

Now, how do we decide the rate? FIrst of all, we should be as conservative as possible. Now, each investor has different ways to model growth. The author personally advises to forecast for the next 10 years, with a higher rate for first 5 years, and then a lower rate for the next 5.

Step 1: Calculate average cash flow rate

To determine average cash flow rate, take the cash flow for the past 3 years to account for the market's cyclical nature. Lets say the Cash flow rate is X.

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 2nd stage deals with the last 5 years. Look at the growth rate trends in the past for the ballpark of numbers. Again, be as conservative as possible.

Estimate FCF

Using the formulas of compound interest with rates r_1 for the first 5 and r_2 for the next 5 years.

We can now form a table(worked out example on Varsity)

What after 10 years? The company won't abruptly end, they are modelled as 'going concerns' which continue to exist forever.

The rate at which free cash flow grows beyond 10 years is called the **Terminal Growth Rate**r_t. Usually, the terminal growth rate is assumed to be less than 5%. The author assumes it to be around 3-4%.

The **Terminal Value** is the sum of all future free cash flow before the 10^{th} 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.

$$\text{Terminal Value} = FCF_{n=10} \times \frac{(1+r_t)}{r_d - r_t}$$

where r_d is the discount rate. (The risk-free interest you get elsewhere in an FD)

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 10th 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 these present values to estimate the net present value. (NPV)

(Table on Varsity)

After we calculate the PV for all FCFs we also need to calculate PV of terminal Value in which we will take $n = 10$

$$\text{Prsent Value of all cash Flows} = \text{NPV of FCFs} + \text{PV of terminal value}$$

The Share Price

We will now calculate the Share price based on all the CFs.

We know all the total cash flow the company is likely to generate. We also know the number of outstanding shares. Dividing the total CFs by the outstanding shares, gives us the share price.

However, we also need to calculate the value of Net debt from the balance sheet:

$$\text{Net debt} = \text{Current year total debt- Cash \& Cash balance}$$

A negative net debt means that the company has more cash than debt and thus needs to be added to the value of the NPV of FCFs.

This now gives us the Total Present Value (TPV)

$$\text{Share price} = \frac{TPV}{\text{Number of Outstanding shares}}$$

The share price is the final output of the share model

Modeling errors and the Intrinsic value band

The DCF model, though scientific, is grounded on a lot of assumptions, which in finance are more of an art than a science. Thus we should assume that we made a few errors along the way.

A leeway of $\pm 10\%$ allows us to be flexible. Now we look at the current stock price and compare to the result we got:

1. If the stock price is below the lower intrinsic value band, 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 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.

Long term investment and surrounding activities provide buying opportunities for a long time. And one can buy the stocks within a very long period of time, stay put and then see the returns roll.

This is why we say that bear markets create value as we can buy valuable opportunities then.

The author also included an xlsx file as a template to perform Equity Research on a company.

Flaws of the DCF model

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 and the top management of the company.
2. *Highly sensitive to the Terminal Growth rate* – The DCF model is susceptible 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 will 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 regularly.
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)

The DCF model may also make you miss out on unusual opportunities as the model is based on certain rigid parameters.

The only safe way to do DCF is to be conservative. Some guidelines for conservative assumptions are:

1. FCF growth rate: Few if any companies can barely sustain any growth beyond 20% in the long run. Thus, the growth rate has to be less than 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 an FCF growth rate of over 20%.

2. Take more 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. Author generally prefers to use a 10 year 2 stage DCF approach.

3. 2 Stage DCF process: As used in the running example, it's always good to split the DCF analysis into phases of a relatively high and then a lower growth rate.

4. Terminal growth rate: Keep it as low as reasonably possible.

Margin of Safety

Popularised by Benjamin Graham. It suggests that an investor should buy a stock only when the stock is available at a discount from the estimated intrinsic value calculation. Following the Margin of Safety does not imply successful investments but would provide a buffer for calculation errors.

The author personally uses a margin or error of 30% from the lower estimate of modelling error.

When quality stocks fall 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.

When to sell?(copied verbatim)

Throughout the module, we have discussed 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 return rate by any yardstick (considering the return is generated in over a year). 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 stock trades' price. Meaning, we do not buy ARBL just because it has declined by 15%. We buy ARBL only because it qualifies through the rigour of the"investible grade attributes". Suppose 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 stay 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. Under 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.

How many stocks in the long term portfolio?

While holding many stocks can diversify(and hence reduce) your risk, holding fewer bets can lead to more concentrated gains. It is upto each investor to decide how many to keep but some of the most successful investors have advised:

1. *Seth Klarman* – 10 to 15 stocks
2. *Warren Buffet* – 5 to 10 stocks
3. *Ben Graham* – 10 to 30 stocks
4. *John Keynes* – 2 to 3 stocks

The author prefers to keep 12-13 stocks and never beyond 15.

Final Conculsions

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* – 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 and apply the checklist* – No matter how much the analyst on TV/newspaper brags about a certain company, doesn’t fall prey to it. You have a checklist; 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.