Economics

# History of Economics

## Agriculture - From Jungle to Civilization

Before civilizations emerged, man was living in the jungle like any other animal. He foraged for food along with his small group of friends. He had no notion of a home, although he had some concept of a territory, which not different from other social animals like lions or monkeys. He had no notion of private possessions either - any weapon his group used was the common property of the entire group and did not belong to any single person. Everyone in his group had the same set of primitive skills such as hunting, making simple tools, clothes from animal skins etc. No one specialized in any particular skill. All of this changed with the invention of agriculture.

When people discovered that they could grow crops wherever they wanted and no longer had to forage for food, they settled down in one place. The notion of home, a permanent shelter, naturally developed as a result. Food security led to the aggressive expansion of their populations. Agriculture meant that a small number of people could produce food for many and hence the rest could divert their thoughts towards other things, such as developing building skills, making new tools etc. After a few hundred years into this process, some were dedicating their entire time to building houses, making furnitures and so on and only a portion of the population was involved in producing food.

## Private Property and Trade

It is thought that even with all these specializations going on, for some time, people still had not developed concepts of private property. Everything people produced belonged to the entire community and was shared with everyone. Building houses, producing food etc. were still community activities. But as populations expanded, at some point, community activities became harder to organize, and the concept of private property and trading developed - Rice became the private property of farmers who grew them and furnitures became the private property of the carpenters who made them. And they exchanged their goods with one another. At this point, communities transformed into societies - after all, the word "community" comes from the root word for "common" and make sense only when there was only common property.

Later in the 19th century, when an idea to abolish all private property was mooted, it came to called “Communism”. Thus, in Communism, everything was common property that would belong to the state and every activity in the country will be organized by the state and the fruits of individual labour will be shared with everyone in the country - exactly the way primitive communities were, only in a much larger scale!!

## The Seeds of Modern Economics

As this barter trading evolved, the idea that some goods were more worth than others developed. A good's worth was calculated based on:

1. How much it was wanted by others - people could have wanted food more than buildings. So the worth of food could have been more than the worth of buildings

2. How much of time and energy one spent in producing it - perhaps making large quantities of food was relatively much easier than making buildings. So buildings could have in fact be held in higher worth than food

3. How much was the competition in producing the good - what if there were way too many builders and way too few farmers? Then, after all, food would have been of more worth than buildings!

The first factor above constitutes what is called "**demand**" and the others two factors constitute what is called "**supply**" in modern economic terminology. It is implicit that the worth of one good can only described relative to another good. For example, one unit of rice as equal to one piece of some standard furniture (say, a chair) or two units of milk. In other words, the "**exchange rate**" of rice to milk was 0.5 and rice to chair was 1 and so on. This way of trading one good for another is called barter trading and people traded this way for a while.

### Currency

Barter trading had several problems. One can only imagine how cumbersome it would have been to remember these exchange rates of one's goods to so many other goods! Besides this, barter trading was inefficient - Suppose a farmer wanted a piece of furniture, but the carpenter would only accept milk as payment for his furniture (perhaps he already had enough rice). In this case, the farmer would have to first trade his rice with the milkman for some milk and then to trade this milk with the carpenter to get his furniture. To solve the problem of dealing with so many exchange rates and to increase efficiency in trading, the concept of currency was invented. The idea is that everyone valued their goods against a standard good, say gold. And if everyone then agrees to trade their goods in return for this standard good, the problems in barter trading vanishes - a farmer no longer needs to remember exchange rates of rice against all existing goods, but just a single exchange rate: that of rice to gold. Similarly, he doesn't have to first trade rice for milk and then trade milk for furniture - people would always pay him in gold and he can use gold to buy furniture.

One may ask why would a society choose gold or silver as the standard good, or as the currency. It is because an ideal currency would be something that is compact & easy to carry, won't perish or degrade in some way, and be easy to store. Thus, gold is a good candidate for a currency because it was compact, it won't perish like rice and it won't catch rust.

Now with a currency in place, a good's worth was no longer mentioned in the form of numerous exchange rates, but with just one "**price**".

# Supply & Demand

Concepts of supply and demand form the very foundations of economics. The interactions between supply and demand decide the price of a product. It is best to explain them by using an example. Let us take an agricultural produce, brinjal (good of interest) and see how restaurants (bulk consumers) would react to different price points (offering prices) and how farmers (producers) would react to different price points (asking prices). A transaction (a purchase) happens when the asking price and the offering price are the same (so both are satisfied).

### Nature of Demand

Restaurants have limited weekly budgets for vegetables. Based on the prices of different vegetables, they will have to decide how much of brinjal to buy, how much of potatoes to buy, how much of capsicum to buy and so on.

Coming to our good of interest, if the offering price of brinjal is Rs. 50/kg, then, let us say restaurants in Pune overall will buy 100 tonnes of brinjal. But, if the price of brinjal were to go up, to say Rs, 70/kg, it is intuitive that restaurants would buy lesser quantity of brinjal and instead would buy more of some other vegetable. If the price of brinjal goes even higher, the restaurants would buy even lesser brinjal.

On the other hand, if price of brinjal were to go to a lower value, say, Rs. 40/kg, it is conceivable that restaurants would now increase the consumption of brinjal at the expense of a more pricy vegetable. And if the price of brinjal falls even further, consumption of it will increase even further.

To conclude, demand falls as price rises and vice versa. This is depicted in the following figure.

## Scarcity and Opportunity Cost

Everything in the world is scarce, or, in other words, nothing in the world is available in infinite quantities. So, everything from energy and time to iron ore and banana are all available only in limited quantities. This scarcity is what attaches value to things: For ex., banana has a certain value because because farming land, farmers energy, water etc., are all only available in limited quantities. On the other hand, if something is available in infinite abundance, it won’t have any value: For ex., sunlight is, for all practical purposes, available in infinite abundance during day time. Consequently it has no value - it may be indispensable for life to exist, but still, no one will pay for it (i.e., it has no value), just because it is readily available in *any* quantity. Conversely, shade is not available in infinite quantities. So people do attach a value to shade, albeit a very small one - but it is conceivable that, if shade becomes rarer, its value will increase and, possibly in a mad max world, it may indeed have a very high value.

It is important not to misunderstand the concept of scarcity: One can argue that solar power is valued even though sunlight is available in infinite quantities. But then, energy of the sun is available in infinite quantities only in the form of heat and light and not as electricity - that is still scarce and hence it has a value.

Scarcity gives rise to choice. Since water is scarce, one needs decide among some choices: drinking the water or using it for cooking vegetables or for growing vegetables or for taking a shower. In other words, the value of the water spent on taking a shower is same as the value of what alternative benefit you can gain, if you were not spending it on taking a shower . Bathing makes us hygienic, but one can think about hygienity only when one have enough water to drink, grow vegetables and eat them!

Opportunity cost is essentially what benefit you lose for a certain benefit you reap. For ex., when we go to movies, there is of course, the direct cost of paying for the tickets, fuel costs for your car etc.. But there is also an opportunity cost, which is the money you would have otherwise made had you not spent your time (a scarce good) for your entertainment - perhaps you could have spent that time learning a vital skill that would improve your performance at work place, which then might lead to your salary increase.

For a farmer, the opportunity cost in marketing his produce is the money he pays a labourer to work on the land when he is spending time on marketing. For a new entrepreneur, the opportunity cost of starting a new business is the money he would otherwise be making had he continued working in a company as a salaried employee.

To summarize, scarcity gives rise to choice and opportunity cost. Things that aren’t scarce have no value and hence are of no interest to the field of economics. That is why aspects of sunlight is not studied in the field of economics, but aspects of solar power is.

## Price of a Product

Now let us get back to the concepts of supply and demand. Fundamentals

## Key Equations

* National Capital = Private Capital + Public Capital
* National Capital = Domestic Capital + Net Foreign Capital
* Net Foreign Capital = Capital in other countries owned by India - Capital in India owned by other countries
* National Income = Domestic Output + net income from Abroad
* National Income = Capital Income + Labour Income
* , where,
  + = Share of income from capital in Income
  + = Rate of return on capital
  + = Capital/Income

## Capital and Income

* Capital is a stock. It corresponds to the total wealth owned at a given point in time *t .* In other words, it corresponds to wealth appropriation over all the previous times (previous years, previous months, days…..whatever the time unit is) combined
* Income is a flow. It corresponds to money made over a stipulated period of time - so it is *not* a quantity accumulated over a period of time
* For an individual, her yearly income may include her income from salary as well as returns from mutual funds, rent from a house, interest from savings acc. Her income, thus, has two distinguishable parts: income from labour (salary) and income from capital (mutual fund returns, rent, savings interest etc.)
* For a company, its income would equal its revenues per year. Of this, whatever is paid to the workers is the income from labour (Labourers got that money because it was ascertained as part of the revenue that was generated because of their labour, and hence one they deserved). Whatever is remaining in the revenue is the income from capital (The machinery they own, investment they received, land they had purchased etc.)
* Imagine a company A produces 1 million $/year of goods (and sells them successfully). Assume that to do this, they needed capital (office buildings, machinery, coffee machines, transportation vehicles etc.) worth 5 million $ and they needed labourers (CEO, VPs, directors, managers, engineers etc.), worth 600K $/year. Then,
  + Their income due to labour would then be 600K $/year
  + Their income due to capital would be: 400 K $/year ((1 million - 600) K $/year).
  + Rate of return on capital is 0.08/year, or 8%/year
  + In the formula, ,
    - = rate of return on capital = 8%/year =
    - = Capital/Income ratio = = 500%
    - = Capital’s share in income = 40% =
* The Income from Capital is not equal to profit. One must deduct expenditure and value loss from the Income due to Capital to get profit.

## Expenditure and Value Depreciation

* An individual is bound to spend part of his income, which is the sum of both income from capital and labour, for daily expenses such as food, entertainment etc. This is expenditure.
  + Items such as TV, fridge etc., should not be included in expenditure as amount to a mere conversion of capital from liquid form to some other form
* The part of the income that an individual saves or converts into other types of capital (house, car etc.) get added to his existing capital
* Capital may lose or gain in value all by itself. This is not to be confused with return on capital, aka income due to capital. For instance, when one buys a house, the value of this house may appreciate after one year - that is capital gaining in value. But the rent collected from that house in that year would amount to income from capital.
* Capital may also depreciate in value. A car, TV, Sofa are examples of capital that lose in value - of course, we aren’t talking about classics that actually increase in value

## GDP and PPP

* GDP is the monetary value of all the products and services coming from within the geographic borders of an entity (say, a country) over a stipulated period of time (say, an year)
* GDP = (National Income - net income from foreign countries) - capital value depreciation
* The unit of GDP is usually USD - one could use any other monetary unit, but dollar is accepted as the most stable currency in the recent past
* But one cannot directly compare, say GDP of India in USD to GDP of Britain in USD and infer the wealth gap between these two countries. The reason is that 1 USD can buy more things in India that in Britain.
  + It is separate topic in itself as to why this disparity exists. But just to give an idea, one may think of health care expenses as being cheaper in India than Britain because India has more doctors or doctors in India charge lesser fee or both.
* Suppose the exchange rate between British and Indian currency is that, 1 GBP = 100 INR, but if 100 INR can purchase twice as many “goods” in India as 1 GBP would in Britain, then, in terms of purchasing power, 1 GBP = 50 INR. In other words, it is beneficial for one convert that 1 GBP to 100 INR and buy twice as many goods in India and loss making for one to convert 100 INR to 1 GBP and buy half as many goods in Britain. We call this as India having a Purchasing Power Parity conversion factor of 2 relative to Britain.
  + Here “goods” is essentially a basket of goods (the same way inflation uses a basket of goods). There is controversy surrounding the choice of goods going into this basket. For instance, a car is an essential commodity in the U.S., whereas it is an item of luxury in India.
* The PPP conversion factor is also widely used with USD as the reference. In other words, for the United States, GDP = USD
* GDP without PPP conversion factor applied to it is called GDP (nominal). With PPP conversion factor applied, it is called GDP (PPP).
* India’s GDP, based on IMF measurements in 2014 was 2.051 trillion USD (nominal) and 7.411 trillion USD (PPP). So, the PPP conversion factor for India is 3.61. And, as expected, for the U.S., it was 17.348 trillion USD (nominal) and 17.348 trillion USD (PPP) - i.e., the PPP conversion factor for the U.S. is 1.
  + Sometimes PPP conversion factor is used in the sense of the inverse of the way we have used it. So it is normal for someone to mention India’s PPP conversion factor as the inverse of 3.61, i.e, 0.277
* One must remember that GDP (PPP) only makes sense in the context of discussing purchases made in the domestic market. And the meaning depends heavily on the basket of goods chosen
* GDP, nominal or PPP adjusted, is a macro-economic indicator and it makes sense only to compare a GDP value to itself (from previous year or quarter..) and make macro-economic inferences. It reflects nothing about the wealth or living conditions of the common men and women of the country.

# Investing

## Risk-Return

* Risk and returns go hand-in-hand. So the study of risk is also the study of returns
* Risk is the likelihood of losing money. In simple terms, in the probability distribution function of profit, the area under the curve to the left of a certain threshold can be termed as risk. This threshold can be expected profit. It can be 0 representing risk to the capital invested
  + The profit distribution curve is assumed to be drawn with inflationary adjustments
* The higher the variance of the profit curve, the higher the volatility
* “Returns” when used in investment terminology usually means annual (annualized?) return
* Alpha, beta, r-squared, standard deviation and the Sharpe ratio are industry standard measurement tools for risk-return
* Alpha is the excess return of investment (RoI) of the fund relative to the RoI of the benchmark index of that investment category. Alpha is a measure of returns.
  + Alpha can be seen as a measurement of the fund manager’s performance
* Beta is the volatility of the fund relative to the market as a whole. Beta is a measure of risk.
  + , where f = fund, b = benchmark. In other words,
  + R-squared = correlation(rf, rb)
* High alpha and lower beta together make a fund better than others.
* R-squared is the cross-correlation coefficient between the benchmark index and a fund. It represents the percentage of a fund portfolio's or security's movements that can be explained by movements in a benchmark index. The higher the R-squared value, the tighter the correlation and higher the likelihood of it following market movements (for that fund category)
  + If R-squared is high, it may mean that the fund manager simply managed the fund such a way that it followed the index. This is useless as we can also do this simple management. Why pay a fee to the manager to make the fund perform as good as the market?
  + If R-squared, i.e., correlation between the fund and the index is weak, then there is no point in looking at alpha and beta.
* Standard Deviation is just that - standard deviation of a fund with mean being its expected annual return
* Sharpe ratio is the (avg?) return of that fund minus risk-free return (U.S. Treasury bond in U.S.) divided by std. Deviation of the return.
* Note that, “expected return” simply means the expectation ().

### References:

[1] <https://www.valueresearchonline.com/story/h2_storyview.asp?str=4163>

[2] <https://www.investopedia.com/articles/mutualfund/112002.asp>

## Miscellaneous

### Fundamental Analysis Vs. Technical Analysis

Fundamental analysis looks at actual strength of companies in terms of their balance sheets, industry conditions etc. Technical analysis looks at stock prices, volume etc. Technical analysis doesn’t care about the intrinsic value of a company, but its perceived value.

## Insurance Plans (Regulator = IRDA)

Three types of insurances (All insurance returns are tax free)

* 1. Term Plan (It is like a car/house insurance. On Death benefit is given. But no returns. Usually Premium is less)
  2. Traditional Plan (Invested in debt instruments. Returns are low. Generally longer periods. Generally returns are in the form of bonus rate declared by the company every year. Law requires that 95%+ earnings has to be distributed to clients as bonus). Bonus will be reinvested
  3. ULIP - Unit Linked Investment Plan. Invested in equities with the facility to give debt exposure as well. Flexible plan - lockin for 5 years. More returns because of equity exposure and consequently less security

## Mutual Funds (Regulator = SEBI)

Mutual funds are investment programs offered by financial companies in which many investors put their money in and the companies’ fund managers invest this money pool into various [Securities](#_kmf85n73f6xn). The granularity of money in which one can invest in Mutual Funds is called a “Share”. This term is same as the term “Shares” used in stock trading - Just like one buys shares of a company that, say, makes profit by selling electronic goods, one buys shares of a Mutual Fund that makes profit by investing in Securities.

Net Asset Value (NAV) of a Mutual Fund is the total value of its Securities divided by the number of outstanding shares. Its value is calculated after the Mutual Funds takes away their commission. So it truly reflects the actual profit that the investor sees. However the absolute value of NAV is of no meaning - the actual action in the NAV, from when it was purchased to the current value, is what really matters.

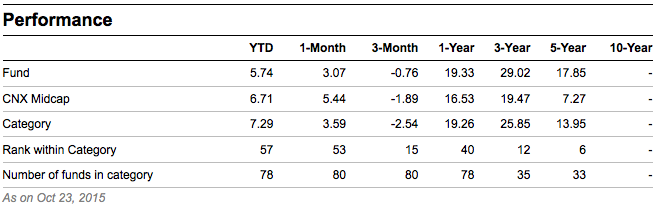
Mutual Funds invest in different types of Securities such as debt funds (where money is loaned to corporations), small cap funds (stocks of companies with small capital), mid cap or large cap funds. Most likely Mutual Funds invest in more than one type of fund, and in different proportions. For ex., a Mutual Fund may invest 20% in small cap, 60% in mid cap and 20% in large cap. Usually the name of the mutual fund will indicate what kind of fund the majority of their Securities come from. So in the above example, that Mutual Fund will carry in its name, “mid-cap”.

Whenever someone purchases a mutual fund, s/he will get the NAV at the close of the day. Same applies to redeeming a mutual fund as well. In other words, it doesn’t matter when in the day redemption request is made - the redemption will happen at the NAV at which the fund closed on that day.

### Understanding Performance Figures

<https://www.valueresearchonline.com/> is a good resource for checking the performance of a given mutual fund in India. Search for the particular mutual fund and go for the ‘Snapshot’. Here are some charts/figures from the website and their explanation

#### Performance



This shows the performance figures of a mid-cap fund. CNX Midcap is an index (like NASDAQ, Sensex etc.) that tracks the performance of all funds of the type in this example (there are many other types). The ‘Category’ row in the table shows the average rate of return taking all Mutual Funds into consideration. The ‘Fund’ row shows the rate of return for the Mutual Fund in question. . The ‘CNX Midcap’ is an index that considers the performance of qualified mid-cap stocks. So one should really compare these the fund and CNX mid-cap rows vertically to understand whether the Mutual Fund in question has outperformed other funds in the same category (in an avg sense)

The YTD (Yield-till Date) column shows rate of return if one had invested money at the beginning of the year in question (Jan 1, 20xx) and is pulling out now. So in this example, had one invested Rs.100 on Jan 1, 20xx, s/he would now get Rs.105.74 now if s/he pulls out.

The 1-Month, 3-Month, 1-year show the performance in the last month and last 3-months and last one year respectively. In other words, in our example, had one invested Rs.100 one year ago (365 days ago), and is pulling out now, s/he would get Rs.119.33

The 3-year, 5-year rate of returns should be read differently: They don’t mean the rate of return had one invested 3 and 5 years ago respectively. They mean the average annualized return had one invested 3 and 5 years ago respectively. In other words, had one invested Rs.100 3 years ago, in our example, and is pulling out now, s/he would be getting Rs.187.06 (i.e. 100 + 29.02\*3years).

Morningstar, for U.S. funds, calculates total returns of a fund after accounting for expenses, including 12b-1 fees, but *not* entry/exit loads, a.k.a. sales charges.

[1] <http://www.morningstar.com/InvGlossary/total-return.aspx>

### Types of Mutual Funds

There are 7 common types of mutual funds as follows [1]:

1. Money Market Funds - invest in short term fixed income securities such as government bonds, treasury bills etc.
2. Fixed Income Funds - like Money Market Funds, but on slightly riskier securities like high yield corporate bonds
3. Equity Funds - invest only in stocks
4. Balanced Funds - Equities + Fixed Income.
5. Index Funds - Track performance of a specific index
6. Specialty Funds - Focus on a single market such as real estate, military goods etc.
7. Funds of Funds - Invest in other funds

### Mutual Fund Classes

In the United States, there are different [classes](https://www.sec.gov/fast-answers/answersmfclasshtm.html) of mutual funds namely:

1. Class A - Fee needs to be paid at purchase time. There may be qualification requirements (min. Amount accepted).
2. Class B - Fee needs to be paid at redemption time. Some have a fixed fee. Some have a CDSL (Contingent Deferred Sales Load), which means the fee decreases gradually as holding time increases. It may also have a 12b-1 fee.
3. Class C - They usually have a level load. Very expensive for long-term investors
4. Class I - Only for institutional investors and not for individuals

References:

[1] <https://www.sec.gov/fast-answers/answersmfclasshtm.html>

[2] <https://www.thebalance.com/mutual-fund-shares-class-types-2466743>

### Expense Ratio

It is a measure of how much of the AUM is spent on op ex, legal fees, 12b-1 fees etc.

In India, NAV factors expense ratio and returns are calculated on the NAV - So they have expense ratio factored as well.

[1] <https://www.valueresearchonline.com/story/h2_storyview.asp?str=31328>

[2] <http://www.business-standard.com/article/markets/nav-is-calculated-after-expense-ratio-108062201039_1.html>

[3] <https://www.sec.gov/investor/pubs/sec-guide-to-mutual-funds.pdf>

### Dynamics of Bonds

Bond is debt instrument issued by companies. Bonds are attractive to companies than getting a loan from banks because investors lend money at a lower rate than banks. Bonds are attractive to investors because they give a higher interest rate than banks give on fixed deposits. In other words, the interest rates of bonds tend to lie between the interest rate at which the bank is willing to lend money to the said company and the interest rate at which the bank is willing to borrow money from the investor. While thinking about this, it is important to keep in mind that the credibility of the company taken in the context of the loan period (maturity period).

Like Equity is first purchased directly from the company, during IPOs, and then traded in the market, bonds are first purchased directly from the company and then traded in the market. Often, when we buy bonds, it is often from some other individual investor. There are two types of bonds, fixed rate bonds and non-fixed rate bonds. I don’t know much about the latter at this time. Fixed rate bonds are like a normal loan - the company assures you, say a 7% interest, and as long as you hold the bond, you are entitled to that 7% rate, no matter what happens to the economy as a whole. This is where RBI interest rates come to play. Suppose one buys a fixed-rate bond at 7% interest rate, with a face value of a 1000 INR, and, at a later time, RBI cuts the interest rate - that means that the same company that offered 7% on the old bonds will be willing to issue new bonds at a lower than 7% rate (because it is easier for them to get a loan from a bank now). This means that the older 7% interest earning bonds are more attractive and investors will be willing to pay >1000 INR to acquire it from you. Of course, the offered price will eventually be limited by the INR value that makes the effective rate of the bond (after accommodating inflated value) is the same as the rate at which the company is issuing new bonds.

Terminology: Coupon rate = interest rate of the bond. “Nominal Yield” = Interest paid so far/face value of the bond. “Current Yield” = Coupon value for that year/Current bond price. YTM or Yield To Maturity is a more complex measure. It is an estimate of profit that can be made from the bond if it is held until maturity.

### References:

[1] <https://www.getsmarteraboutmoney.ca/invest/investment-products/mutual-funds-segregated-funds/7-common-types-of-mutual-funds/>

## Regulatory Bodies

* In India, loans (personal loan, house loan, loan to businesses etc.) are regulated by RBI. Insurances are regulated by IRDA and Mutual funds by SEBI.

## Taxation

* Profit on equity is taxed at 15% if the equity was bought and sold within one year (short term capital gain). If the equity was held more than one year, tax on profit is 0%
* Profits from mutual funds with >= 65% exposure to equity are, for taxation purposes, considered as profit from equity. I think these funds are called ‘Equity Mutual Funds’
  + Dividends from such mutual funds are also tax free
* For profit from debt funds, if held for >= 3 years, one can either pay their income tax bracket or take advantage of ‘indexation benefits’ - that is inflation for the 3 years (in a compounding fashion) are considered and only the portion of the profit rising above this compound inflation is taxable - and the tax rate is flat 20%.

### Securities

A Security is simply a tradable financial asset. Generally Securities are classified as:

1. Debt (ex. bonds, debentures, bank notes)
2. Equity (stocks)
3. Derivatives (ex. futures, options, swaps)

## Interest Rates

### Effect of RBI Interest Rates

When we hear RBI increasing/decreasing interest rates it is about the interest rates on the loans that other banks avail from RBI in order to fulfill their reserve requirements. So, if the RBI slashes interest rates, there will be increased borrowing from banks. This causes a chain reaction. Because banks are getting loans from RBI at lower rates, they will set lower rates on the loans they give out - to corporations, people, investors etc. Borrowing will become attractive and people will borrow and spend. Spending increases demand and generally is good for the economy. On the downside, increased demand causes inflation. Therefore we have the following rule:

Remember that, while cutting interest rates will have an effect on increasing the demand, it has no control over the supply. The implication of this is more apparent when you think of it the other way around: Increasing interest rates may control inflation, but reduced supply may increase/maintain inflation despite a cut in interest rates.

### Effect of Fed Interest Rates (U.S.)

# Accounting

There are 3 main statement in accounting: Income statement, cash flow statement and balance sheet.

## Income Statement

Income statement shows items pertaining to revenue and profit. The following table shows an example annual income statement of a company for two years. As normal in financial terminology, terms in brackets are to be subtracted from terms without brackets appearing before them.

|  |  |  |
| --- | --- | --- |
| ***(Figures USD)*** | ***2008*** | ***2009*** |
| Net Sales | 1,500,000 | 2,000,000 |
| Cost of Sales | (350,000) | (375,000) |
| Gross Income | 1,150,000 | 1,625,000 |
| Operating Expenses, a.k.a. SG&A | (235,000) | (260,000) |
| Operating Income | 915,000 | 1,365,000 |
| Other Income (Expense) | 40,000 | 60,000 |
| Extraordinary Gain (Loss) | - | (15,000) |
| Interest Expense | (50,000) | (50,000) |
| Net Profit Before Taxes (Pretax Income) | 905,000 | 1,360,000 |
| Taxes | (300,000) | (475,000) |
| Net Income | 605,000 | 885,000 |

* **Net Sales:** Revenue from sale of goods
* **Cost of Sales**: Cost of production. This includes cost of raw materials, energy cost incurred towards production of goods etc. Depreciation (Capital value depreciation) is accounted as part of the Cost of Sales.
* **Gross Income**: Net Sales - Cost of Sales. Gross margin = Gross Income/Net Sales)\*100 %.
* **Operating Expenses:** AKA Selling, General and Administrative expenses. Includes advertisement cost, salaries to employees not directly involved in production likes sales personnel, executives and R&D expenses. Sometimes R&D expenses are shown separately as an item. This is so as to give investors an idea about how much the company is spending on order to have a bright future.
* **Operating Income**: Gross Income - Operating Expenses.
* **Other Income:** Interest/Dividends from investments
* **Extraordinary Gain (Loss)**: Something that isn’t recurring (otherwise it would have been accounted for in one of the above bullet points.
* **Interest Expense**: Interest to be paid on loans to banks, on bonds.
* **Pretax Income:** Operating Income + Other Income + Extraordinary gain (loss) - Interest expense

The rest is self-explanatory. You can see that this example company increased its gross margin and operating margin from 2008 to 2009. These are indications that the company is doing well.

It is important to understand the difference between Cost of Sales and OpEx. Cost of Sales takes only those expenses into account that are directly incurred because of making a sale, while OpEx is about expenses that are incurred whether or not there was a sale. For ex., in a Cafe business, every coffee sold incurs expenses such as the coffee bean spent on making the coffee, the amount of milk used, the cost of the coffee cup etc. Whereas, rent of the coffee shop, salary to employees will be included in the OpEx. In some business, say a handicraft business, to sell more goods, you would need more people (so that you can make more goods in the first place). The salary for these people will be included in the Cost of Sales and the salary for the supervisor of these people will be included in OpEx. Many companies, including all tech companies, don’t include Cost of Sales in their books because most of the their expenses are incurred whether or not they sell the product.

## Cash Flow Statement

The cash flow statement is distinct from the income statement and balance sheet because it does not include the amount of future incoming and outgoing cash that has been recorded on credit. It shows whether the company will be able to pay its obligations on time and hence won’t risk bankruptcy. Cash flow statement involves three components:

* **Core Operations** component of cash flow reflects how much cash is generated from a company's products or services. Generally, changes made in cash, accounts receivable, depreciation, inventory and accounts payable are reflected in cash from operations.
* **Investing** component records cash outflow due to conversion of cash into other forms of capital (ex., machines, building) and cash inflow due to divestment (ex., selling machines, building)
* **Financing** component records cash outflow when dividends are paid to investors and cash inflow when capital is raised from investors.

## Balance Sheet

Balance items has three major items namely Assets, Liabilities and (Shareholer’s) Equity. The following equation shows the relationships among them:

Equity = Assets - Liabilities

* **Assets**: Includes all forms of money realizable
  + **Current Assets** are those that can be quickly converted into cash when needed. The most important ones are:
    - **Cash:** Needs no explanation. More cash implies more liquidity and hence protection against tough times. It also means possibility of an investment at short notice (market for a new product suddenly opens up). Dwindling cash is a sign of trouble. But if lots of cash is lying around balance sheet after balance sheet, it means the company is struggling to grow or the management is short-sighted and don’t know how to invest the cash.
    - **Accounts Receivable**: Money that we are expecting to receive. This could be because we had sold our product on credit and soon the customer is going to pay for it.
    - **Inventory**: Raw materials purchased but not utilised, finished good that is not yet sold or any intermediate good not converted to finished product yet. Inventory turnover (cost of goods sold divided by average inventory) measures how quickly the company is moving merchandise through the warehouse to customers.If inventory is growing faster than sales, it signals deteriorating fundamentals. On the other hand, if the inventory isn’t keeping up with sales, the company would miss out on sales opportunities.
  + **Long Term Assets** contains
    - **Fixed Assets**: Machinery, buildings owned etc. Usually the value reported for fixed assets are not easily verifiable and companies tend to inflate these figures. So investors don’t pay too much attention to these
    - **Intangible Assets**: Intellectual Property, Copyrights, Brand value, Good Will etc.
* **Liabilities:** Whatever the company owes to others - that is money it needs to pay, but hasn’t paid yet.
  + **Current Liabilities:** 
    - EMI type payments on debts
    - Rent, wages owned etc.
  + **Long Term Liabilities:**
    - **Long-term Debt**: Interest/capital payments on debts, bonds
* **Equity:** Sometimes called “net assets”. Contains two important parts namely,
  + **Paid-in Capital**: Money that was originally put in when the company started and directly invested at some other point in time.
  + **Retained Earnings:** Money retained from net income (after paying dividends, if any) within the company to be reinvested.

There is something called an Off-Balance Sheet Debt that investors should be aware of. This is a way companies use to hide away some debts.

### Quick Ratio

Quick Ratio = (Current Assets - Inventory)/Current Liabilities. If this is >= 1, it means the company has enough liquidity to cover their short term obligations.

# Financing

## General Terms

* **Market Capitalization**: Outstanding stock \* share price (of a company)
* **Creditor** is someone to whom the company owes money in the form of loan/bond interest/capital payment. In other words, the assets contributed by Creditors appear in the liabilities portion of the balance sheet.
* **Investor** is someone who owns equity in the company. In other words, the assets contributed by the investor shows up in the equity portion of the balance sheet.

## Methods of Financing

The sources of financing are, generically, capital self-generated by the firm (retained earnings) and capital from external funders, obtained by issuing new debt and equity

* **Debt** *from the company’s PoV* is attractive when loan interest rates are low. The good thing about debt is that, it is a simple expense that doesn’t change the ownership structure of the company. It appears as a predictable expense in the balance sheet. Since it is considered an expense, income taxes are calculated after debt payments are made. The downside of debt is that it does affect the cash flow statement, and when the company is going through hard times, the need to pay off creditors on time could create headaches.
* **Debt** *from the creditor’s PoV* is attractive as it is less riskier than equity. When a company becomes bankrupt and is liquidated, creditors are first paid followed by preferred stock owners and if there is anything still left, only then are common stock owners paid.
* **Equity** *from the company’s PoV* is attractive because, it is not obliged to pay the equity owners, i.e., investors, money on time - Basically investors are the owners of the company and if the company is losing money, it is same as owners losing money. The downside is that, equity owners will now have a say in how the company should be run, where it should invest its retained earnings etc. If company sells 50% of its stock to someone early on when the company wasn’t doing well, that someone will continue to own half of the company indefinitely even if the company’s earnings have drastically improved over the years.
* **Equity** *from the investor’s PoV* is attractive because it usually has more returns than debt - this comes, of course, from the inherent risks involved.

# Fiscal and Monetary Policy

## Regulatory Tools RBI Uses[1]

* Cash Reserve Ratio
  + CRR is the money that banks are required to deposit with the RBI, for which they will not be paid interest. At present, the RBI has fixed this at 4%.
* Statutory Liquidity Ratio
  + Banks have to deposit a portion of their money in relatively safe assets which are easily saleable - such as government bonds, securities or gold - to generate liquid cash in the event of a run on the bank. The current SLR is 19.5%.
* Repo rate
* Reverse repo rate

## References

[1] <https://www.thehindu.com/business/Economy/all-you-need-to-know-about-indias-npa-crisis-and-the-frdi-bill/article21379531.ece>