

ZERODHA

Personal Finance (Part 1)

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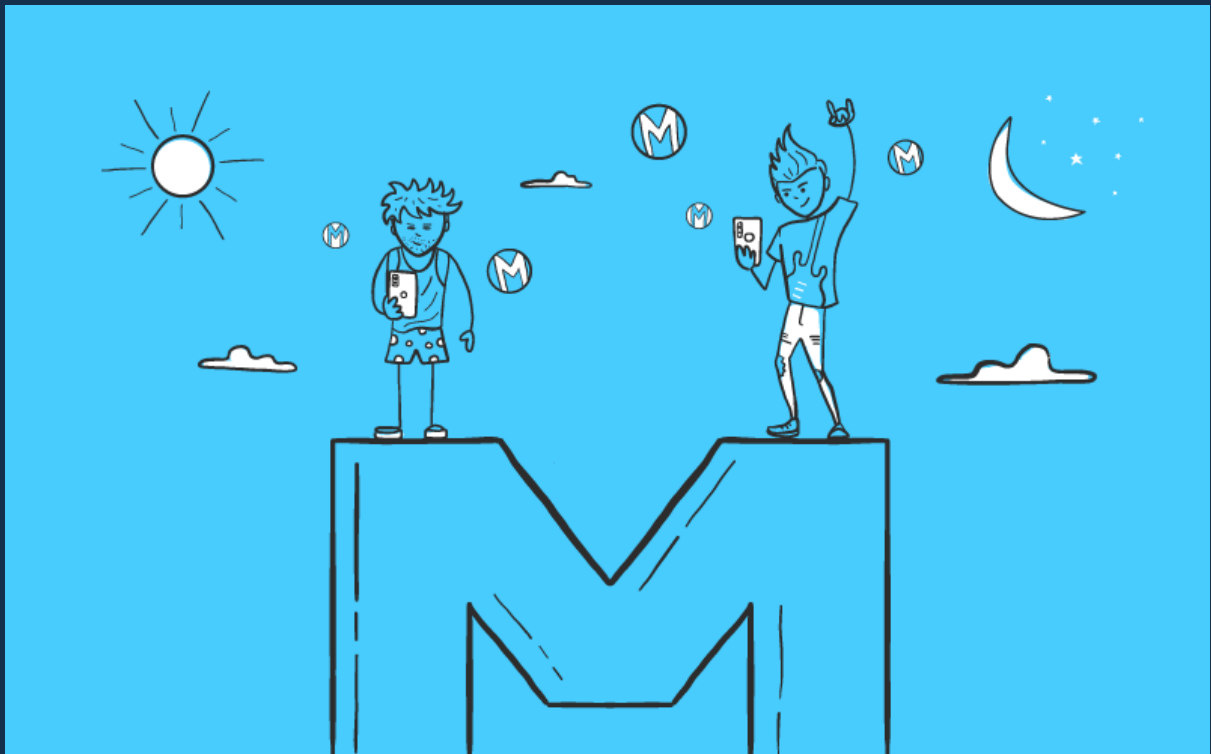


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CHAPTER 1

Background and Orientation

1.1- What's in the name?

I recently heard Joe Rogan's podcast with Naval Ravikant. This is a 2-hour conversation and I think this is one of the most thought-provoking and stimulating conversations I've heard in a while. The topics discussed are quite scattered and covers a diverse set of topics, but it has a great flow to it with one thing leading to another. I'm awestruck with Naval's multi-disciplinary approach to many things in life including inner peace, creativity, capitalism, and of course, wealth creation. The granular clarity he has on these topics is quite impressive. I'd suggest you check out the [podcast/YouTube video](#) if you've not already done that yet.

For obvious reasons, the wealth creation bit lingered on in my mind for a while. I was thinking about what Naval said in this podcast and it resonated with everything I have ever learned and experienced with money and my own pursuit to generate wealth. I'm nowhere close to the 'financial freedom' state he describes in the podcast, but at least I know that I'm not deviating much from the track. While I continue this journey, I thought why not share some of my experiences and learning with you all.

Hence this topic on 'Personal Finance'.

When you think about personal finance, it often circles around planning your financials today, so that you have a better tomorrow. While some can do this

themselves (or so they believe), few consult a financial advisor to chart this map for them. However, I'm not a big fan of approaching a financial advisor to help you chart a plan for yourself and your family. You should be able to do this yourself and your family.

After all, you know your family and their requirements best. You know what is good for the family and what is not. You work hard for your family today and dream of a secure future for them.

Your 'Financial Advisor', won't do any of this.

He is most likely eager to peddle you a financial product that will earn him a good return. He will do the same with you and 20 other clients he may have.

So eventually, the onus is on you to secure your family's and your own financial wellbeing. Remember, this is called 'Personal' finance for a reason. Its best kept personal and dealt with care and diligence.

Good news is, this is not rocket science. If you have the skills to do basic arithmetic, then half the battle is won. The rest of the work is just the application part where you'll figure what is good and what is not.

This is exactly the objective of this module. At the end of this module, you will be in a position to do these things –

Develop a deeper understanding of financial products and what goes under the hood

Set up a financial goal and work towards achieving that

Identify financial setbacks and address towards correcting them

I hope you are as excited as I'm about this module!

1.2- I'm not ready yet

Getting my first job was a struggle. I spent 6-8 month meeting tons of people, desperately looking for a job. I finally landed up with a 'job' to do. This was my first job and it was special. After working for a month, I got my first pay cheque ever and I was ecstatic. I felt responsible for the first time in my life.

I had a bunch of things planned with my first pay. Right from buying my mother a saree to taking my girlfriend (now my wife) out for dinner J. Being in a position to do things for your loved ones always feels good.

After all the expenses, I still had some money left in the account, albeit very little.



A good friend of mine suggested that I should invest that money. I brushed away his advise, thinking that the money left in my account was very little and would not make any difference whatsoever. However, I convinced myself that I would start saving next month onwards.

As predictable as it can get, next month to a similar story. I spent all the salary money and had nothing left to save. No points of guessing, this continued for years and I never saved a dime.

Even today, I regret doing this. In fact, this probably is one of the top regrets in my life. I wish I had started saving early on in life.

I'm sure most of your reading this may relate to my story. We all brush aside saving money today because the 'amount' of money we intend to save is very small. We all keep waiting to receive a sizable amount of money so that we can start our savings journey with that.

This never happens and unfortunately, we never start saving in life.

Here is an advise – even if it is a small amount, save it. This will make a huge difference in your financial life.

Allow me to tell you the story of 3 sisters to help you understand why you need to start saving early in life.

A father had triplet daughters. On their 20th birthday, the father declared that he would pay each daughter a sum of Rs.50,000/- on their birthday, till they were 65 years old. They were free to use this money in whichever way they wanted.

As a good father, he also suggested to his daughters that they could invest this money in a promissory note, which would pay them a return of 12% compounded year on year, with a condition that once invested, they were prohibited to withdraw that money till they turn 65.

Although they were triplets, their attitude towards money and savings were very different. Here is how each daughter utilized this money –

The first daughter started investing right away i.e on her 20th birthday. She invested the first nine 50Ks that she received in the promissory note, and then the remaining 50K that she received (from 28th birthday to her 65th birthday) were all spent on frivolous things.

The second daughter initially spent all the money she received. However, on her 28th birthday, she got a little serious. She decided to save the same amount as her other sister. So she saved 50K from her 28th birthday till her 36th birthday, and the money she received from 37th to 65th was spent.

The 3rd sister was a bit casual till her 28th birthday. She spent all the money she received from her dad. However, on her 28th birthday, she got a little serious and decided to invest the 50k cash all the way up to 65 years.

Here is a summary of what each sister did with the money –

BirthDay	Sister 1	Sister 2	Sister 2
20	50000	Spend	Spend
21	50000	Spend	Spend
22	50000	Spend	Spend
23	50000	Spend	Spend
24	50000	Spend	Spend
25	50000	Spend	Spend
26	50000	Spend	Spend
27	50000	Spend	Spend
28	50000	50000	50000
29	Spend	50000	50000
30	Spend	50000	50000
31	Spend	50000	50000
32	Spend	50000	50000
33	Spend	50000	50000
34	Spend	50000	50000
35	Spend	50000	50000
36	Spend	50000	50000
37	Spend	Spend	50000
38	Spend	Spend	50000
39	Spend	Spend	50000
40	Spend	Spend	50000
41	Spend	Spend	50000
42	Spend	Spend	50000
43	Spend	Spend	50000
44	Spend	Spend	50000
45	Spend	Spend	50000
46	Spend	Spend	50000
47	Spend	Spend	50000
48	Spend	Spend	50000
49	Spend	Spend	50000
50	Spend	Spend	50000
51	Spend	Spend	50000
52	Spend	Spend	50000
53	Spend	Spend	50000
54	Spend	Spend	50000
55	Spend	Spend	50000
56	Spend	Spend	50000
57	Spend	Spend	50000
58	Spend	Spend	50000
59	Spend	Spend	50000
60	Spend	Spend	50000
61	Spend	Spend	50000
62	Spend	Spend	50000
63	Spend	Spend	50000
64	Spend	Spend	50000
65	Spend	Spend	50000

The first sister saved for the first 9 years (between 20th to 36th birthday) totaling Rs.450,000/-.

The 2nd sister saved for 9 years (between her 28th birthday to 36th birthday), totaling Rs.450,000/-

The 3rd sister started saving from her 28th birthday, but saved all the way till her 65th birthday, totaling a sum of Rs.1,900,000/-

I have a question for you now – on the 65th birthday, which sister do you think would have saved the most? Remember, once the money gets invested the promissory note, it gets locked till the 65th birthday and do not forget the promissory note gives a 12% compounded return year on year.

Pause and think about it for a moment.

Chances are here is how you'd think about this –

The first sister saved too little, very early on, so she would not have saved much

The 2nd sister again has saved very little very randomly, so she may not have much on her 65th birthday

The 3rd sister, although started late, has saved quite a bit and continued to save for the entire duration, hence she must have the highest savings on her 65th birthday

This is expected (in fact I'd be surprised if it is anything else) as we humans see things in a very linear fashion. Here we equate the future value of our savings to the amount of money saved today. But there are two other variables at play here – time and return, both of these when concocted together, works in a beautiful nonlinear way.

So, here are how the numbers stack up for the 3 sister problem, the numbers may put you off guard so hold your breath –

The 3rd sister saves 19L, which grows to a massive 3.05Cr by the time she turns 65

The 2nd sister saves 4.5L, which grows to an impressive 1.98Cr by the time she turns 65

The 1st sister saves 4.5L, however, she ends up with a whopping 4.89Cr by the time she turns 65!

Are you confused?

I'm sure some of you are. So here is what I want you to note –

The first and 2nd sister saved similar amounts, but the difference was the amount of time they both gave their money to grow. The first sister gave full 45 years for the investment to grow, but the 2nd sister gave only 38 years. See the difference it makes? This is the reason why I regret not starting to save early on in my life

The 3rd sister ends up with the 2nd highest corpus, but for to that happen she had to save for a very long time. But please note, this still does not match up to the 1st sister's corpus.

So if you are someone like me, who missed savings during my early days, then the best option we have now is to save for a really long time.

I hope by now, I've convinced you why you need to start saving early. By starting early, you use time to your advantage and it does play a major role.

Wait for a second – how did I calculate the growth of money for each sister? How did I figure sister 1 saved 4.89Cr and sister 2 saved 1.98Cr?

Well, this is calculated by applying the core concept of 'Time value of money'. Time value of money is the central theme of personal finance. Hence, for this reason, we need to understand this concept right at the beginning. So in the next chapter, we will discuss time value and its application in more detail.

[Download](#) the excel sheet used in the chapter below.

Key takeaways from this chapter

- Personal finance is best when kept personal to oneself.
- Eventually, you as an individual should be able to build a financial plan for yourself and your family
- Savings early on in life makes a huge difference in the savings corpus at the end of the tenure
- Time value of money plays a key role in personal finance.

CHAPTER 2

Personal Finance Math (Part 1)

2.1 – Simple Interest

When it comes to personal finance, one of the key things to learn is the math that surrounds this topic. Once you understand the math bit, the rest is just the application of it and life becomes easy after that.

In this chapter, I'll try and explain the most basic math involved starting from simple interest. I know this is explained across multiple chapters across multiple modules in Varsity, but for the sake of completeness let me include all of it in one single chapter.

Let us run through an imaginary transaction, my guess is that this a familiar situation for most of us.



Imagine that one of your friends needs money urgently and he approaches you for it. Being a friend, you agree to help him with the money but being a capitalist at heart, you also expect your friend to pay you 'interest' on the cash you lend to him. I know we don't usually ask a friend to pay us interest, but let's just assume he is a friend whom you'd like to help, but not at the opportunity cost of your money.

The transaction details are below –

Amount – Rs.100,000/-

Tenure – 5 years

Interest (%) – 10

As you can see, your friend agrees to repay Rs.100,000/- over a 5 year period and also agrees to pay you an interest of 10%.

Given this, how much money will you make at the end of 5 years? Let's do the math and find out the details.

Remember, the yearly interest is paid on the principal amount.

Principal = Rs.100,000/-

Interest = 10%

Yearly interest amount = $10\% * 100,000$

= Rs.10,000/-

Here is how the math looks –

Year	Principal Outstanding	Interest payable
------	--------------------------	---------------------

01	Rs.100,000/-	Rs.10,000/-
02	Rs.100,000/-	Rs.10,000/-
03	Rs.100,000/-	Rs.10,000/-
04	Rs.100,000/-	Rs.10,000/-
05	Rs.100,000/-	Rs.10,000/-
Total Interest received		Rs.50,000/-

So as you can see, you can earn Rs.50,000/- in total interest from this payment. The amount you earn from the interest can also be calculated by applying a simple formula, which you may remember from your school days –

Amount = Principal * Time * Return

Where the return is the interest percentage.

$$\text{Amount} = \text{Rs.100,000} * 5 * 10\%$$

$$= \text{Rs.50,000/-}$$

I'm sure you'd agree that this is quite straightforward and most of you would remember that this is simple interest.

In simple interest, the interest gets charged only on the outstanding principal.

Imagine a bank transaction, you deposit Rs.100,000/- in a bank's Fixed Deposit scheme, which promises to pay you a simple interest of 10% year on year for 5 years. At the end of 5 years, you'll earn Rs.50,000/- as interest income. The math is still the same.

Banks don't pay simple interest, they pay compound interest. What do you think is the difference between simple interest and compound interest?

2.2 – Compound interest

Compound interest works differently compared to simple interest. If someone agrees to pay you compound interest, then it essentially means that the person or the entity is agreeing to pay you interest on the interest already earned.

Let's figure this out with the same example discussed above. The transaction details are as follows –

Amount – Rs.100,000/-

Tenure – 5 years

Interest (%) – 10

Interest type – Compound Interest (compounded annually)

The math is as follows –

Year 1

At the end of 1st year, you are entitled to receive a 10% interest on the principal outstanding and previous interest (if any). For a moment assume you are closing this at the end of the 1st years, then you would receive the principal amount plus the interest applicable on the principal amount.

Amount = Principal + (Principal * Interest), this can be simplified to
 = Principal * (1+ interest)

Here, (1+interest) is the ‘interest’ part and the principal is obviously the principal. Applying this –

$$= 100,000 * (1+10\%)$$

$$= 110,000$$

Year 2

Now assume, you want to close this in the 2nd year instead of the first, here is how much you’d get back –

Remember, you are supposed to get paid interest on the interest earned in the first year, hence –

$$\text{Principal} * (1+ \text{Interest}) * (1+\text{Interest})$$

The green bit is the amount receivable at the end of 1st year, and the blue bit is the interest applicable for the 2nd year.

We can simplify the above equation –

$$= \text{Principal} * (1+ \text{Interest})^2$$

$$= 100,000 * (1+10\%)^2$$

$$= 121,000$$

Year 3

In the 3rd year, you’d get interest on the 1st two year’s interest as well. The math –

$$\text{Principal} * (1+ \text{interest}) * (1+\text{interest}) * (1+\text{interest})$$

The green bit is the amount receivable at the end of 2 years, and the blue bit is the interest applicable for the 3rd year.

We can simplify the above equation –

$$= \text{Principal} \times (1 + \text{Interest})^3$$

$$= 100,000 \times (1 + 10\%)^3$$

$$= 133,100$$

We can generalize this –

$P \times (1 + R)^n$, where –

P = Principal

R = Interest rate

N = Tenure

So, if you were to have this open for the entire 5 years, you'd receive –

$$= 100,000 \times (1 + 10\%)^5$$

$$= \text{Rs.161,051/-}$$

Contrast the difference between the 50K received in simple interest versus the Rs.61,051/- received via compound interest.

Compound interest and compounded return work magic in finance. At the end of the day, every aspect of personal finance boils down to the compounded return. For this reason, I think it is best to spend some more time trying to understand the concept of compounding of money.

2.3 – Compounded returns

The concept of compounded return is similar to compound interest. The concept of return and interest is very similar, just like the two sides of the same coin. The interest is what you pay when you borrow money in any form and the return is what you earn when you invest your money in any asset. Therefore, if you understand interest, then it is easy to understand the return.

In this section, you will learn about how the return is measured. Based on the time horizon of your investment, the return measurement differs.

You will use the **absolute** method to measure the return if your investment horizon is less than a year. Otherwise, if your investment horizon is more than a year, you will use CAGR or the **compounded annual growth rate**, to measure returns.

I guess the difference in absolute and CAGR is best understood with an example.

Assume you invested Rs.100,000/- on 1st Jan 2019 in a financial instrument which yields you a 10% return (per year) and you withdraw this investment a year later. How much money do you make?

Quite straight forward as you can imagine –

You will make 10% of 100,000 which is Rs.10,000/-, in other words, your investment has grown by 10% on a year on year basis. This is the absolute return. This is straightforward because the time under consideration is 1 year or 365 days.

Now, what if the same investment was held for 3 years instead of 1 year, and what if instead of a simple return of 10%, the return was compounded annually at 10%? How much money would you make at the end of 3 years?

To calculate this, we simply have to apply the growth rate formula –

$$\mathbf{Amount = Principal * (1 + return)^{(time)}}$$

Which as you realize is the same formula used while calculating the compound interest. Applying this formula –

$$100,000 * (1 + 10\%)^{(3)}$$

$$\mathbf{= Rs.133,100/-}$$

Referring to the previous section, if you were to charge compound interest, then this is the same amount of interest you receive from your friend in the 3rd year.

Continuing on the same lines, here is another question –

If you invest Rs.100,000/- and receive Rs.133,100/- after 3 years, then what is the growth rate of your investment?

To answer this question, we just need to reorganize this formula –

$$\mathbf{Amount = Principal * (1 + return)^{(time)}}$$

and solve for ‘return’.

By doing so, the formula reworks itself to –

$$\mathbf{Return = [(Amount/Principal)^{(1/time)}] - 1}$$

Return here is the growth rate or the CAGR.

Applying this to the problem –

$$\mathbf{CAGR = [(133100/100000)^{(1/3)}] - 1}$$

$$\mathbf{= 10\%}$$

2.4 – The compounding effect

Apparently, Albert Einstein once described ‘compound interest’ as the 8th wonder of the world. I guess he could not describe it any better. To understand why you need to understand the compound interest in conjunction with time.

Compounding in the finance world refers to the ability of money to grow, given that the gains of year 1 get reinvested for year 2, gains of year 2 gets reinvested for year 3, so on and so forth.

For example, consider you invest Rs.100 which is expected to grow at 20% year on year (recall this is also called the CAGR or simply the growth rate). At the end of the first year, the money grows to Rs.120.

At the end of year 1, you have two options –

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

Withdraw the profits of Rs.20

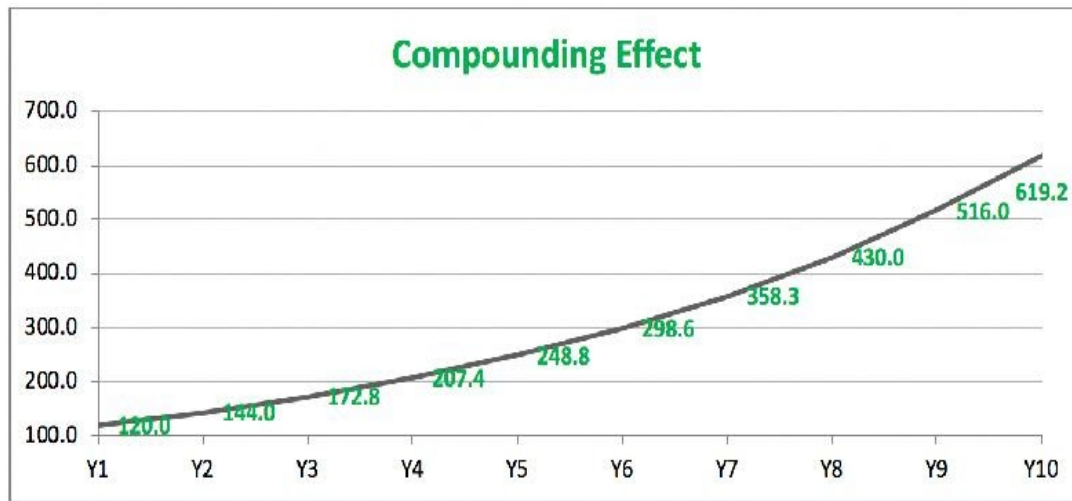
You decide not to withdraw Rs.20 profit; instead, you decide to reinvest the money for the 2nd year. At the end of the 2nd year, Rs.120 grows at 20% to Rs.144. At the end of 3rd year, Rs.144 grows at 20% to Rs.173. So on and so forth.

Compare this with withdrawing Rs.20 profits every year. Had you opted to withdraw Rs.20 every year than at the end of the 3rd year the profits collected would be Rs. 60.

However, since you decided to stay invested, the profits at the end of 3 years are Rs.173/-. This is good Rs.13 or 21.7% over Rs.60 earned because you opted to do nothing and decided to stay invested.

This is called the **compounding effect**.

Let us take this analysis a little further, have a look at the chart below:



The chart above shows how Rs.100 invested at 20% grows over a 10-year period.

In the next chapter, we will understand the other crucial concept in personal finance – Time value of money.

Key takeaways from this chapter

- Simple interest is the interest that gets paid only on the outstanding principal
- Compound interest is paid on both interest and the principal outstanding
- Interest and return are like two sides of the same coin
- Absolute return is a measure of the growth in return when your investment is for less than a year

- Compounded annual growth rate (CAGR) is the measure of your return when your investment duration is more than a year
- Compounding works best when you give your investments enough time to grow

CHAPTER 3

Personal Finance Math (Part 2)

3.1 – Money today versus money tomorrow



For a moment, assume a friend of yours is in a very generous mood and he gives you two offers, of which you have to select one of them.

Option A – He gives you Rs.10,000/- right away

Option B – He promises to give your Rs.10,000/- exactly two year from now

To add a little twist, assume you do not need the money today, but in two years, you are planning to buy a new car.

Will you take the money today even though you do not need the money or will you take the money two years from now, when you would need the money?

By the way, there is no question of your friend backing out on his promise after two years, he is a good guy and he will certainly give you the promised money.

So given these two options, and the other things around it, which one are you likely to choose?

If I were to guess, most of you reading this will opt for Option B. The rationale being, that there is no real need for money today, so if you were to take the money today, you'd spend that money on unnecessary things and waste the money. Hence you are better off taking that money two years later.

Assuming the above were to be true, here are few questions to you –

1. Does it make sense to equate money across timelines i.e money today versus money tomorrow?
2. How do you move money across a timeline to ensure we compare the right value of money?

To make the right decision, you need to have clarity on moving money across the timeline. You need to compare the value of money today versus the value of money tomorrow.

The objective of this chapter is to help you understand just this i.e to help you compare money across different timelines.

Hopefully, by the end of this chapter, you will be better equipped to make a sensible decision concerning your friend's generous offer and of course for more serious things in life as investment planning J

The discussion we are about to have is a core financial concept called the '**Time value of money**' (TVM). The time value of money finds its application across many different areas of finance including project

finance, insurance planning, equity derivatives, valuations, and of course personal finance.

The time value of money has two components – the present value of money and the future value of money.

3.2 – Present value of money

We all buy assets with a hope that it will generate a decent return over time. For example, if I were to buy a piece of land today then I would expect it to grow to a certain value in 15 years. The amount of money I will receive when I sell this piece of land in 15 years will have a very different value when compared to the same value today.

The concept of **Present value** helps you understand the value of the funds you are likely to receive in the future in today's terms.

Sounds confusing? Probably :)

Let's understand this with an example.

Consider that you purchased a piece of land for Rs.15,000,000/- today and held it for 15 years. After 15 years, you sell the land at Rs.75,000,000/-. On the face of it, this looks great, after all, you've made a five times return on this.

But here is an important question you need to ask yourself. How valuable is Rs.75,000,000/- that you will receive 15 years from now, in today's terms?

What if in 15 years from today, Rs.75,000,000/- is less valuable than Rs.15,000,000/-?

To find the answer to this, we need to understand two things –

What is my risk-free opportunity cost today?

Given the risk-free opportunity cost, what is the amount that needs to be invested today, such that it grows to Rs.75,000,000/- in 15 years.

The answer to the 2nd question is, in fact, today's equivalent of Rs.75,000,000/- that you'd receive in 15 years. So let us figure this out.

We are talking about a 15-year time horizon here.

The opportunity cost is the equivalent of what else can be done with the funds available if we choose not to invest this money in the real estate deal. The opportunity cost can be found out by figuring out the risk-free rate in the economy and adding a risk premium over and above the risk-free rate.

So the opportunity cost –

Opportunity cost = Risk free rate + Risk premium

The risk-free rate is the rate at which our money can grow without any risk. Of course, we can endlessly argue that there is nothing like a true risk-free rate, but for the sake of this discussion, let's assume that the risk-free rate is the Government's 15-year bond. Usually, the Governments are expected not to default on their payments/repayments, hence the Government or the Sovereign bond is a good proxy for the risk-free rate.

Here is a snapshot of all the available Sovereign bonds –

Reserve Bank of India		NDS - OM					Negotiated Dealing System				
							Order Matching Segment				
Home Page	SG Mkt. Watch	T-Bills Mkt. Watch	WI Mkt. Watch	Odd Lot Mkt. Watch	Market by Price	Individual Trades	Active Member List				
Central Government Market Watch											
Security Description	Maturity Date	Bid Amt. (Cr.)	Bid Yield	Bid Price	Offer Price	Offer Yield	Offer Amt. (Cr.)	LTP	LTY	LTA	TTA (Cr.)
92.26.GS.2022	14/01/2029	5.00	6.4023	106.0000	106.0100	6.4010	5.00	106.0100	6.4010	10.00	18125.00
92.32.GS.2024	28/01/2024	25.00	6.2928	103.9525	104.0200	6.2756	15.00	103.9700	6.2883	10.00	1995.00
92.17.GS.2028	08/01/2028	5.00	6.6430	103.3500	103.4300	6.6308	5.00	103.3500	6.6430	5.00	725.00
92.27.GS.2026	08/04/2026	5.00	6.5365	103.9025	104.0350	6.5123	5.00	103.9500	6.5278	25.00	295.00
92.24.GS.2022	25/05/2025	10.00	6.5477	105.9700	105.7200	6.5173	20.00	105.5200	6.5578	5.00	210.00
98.12.GS.2022	21/09/2022	25.00	6.1468	105.5500	105.7500	6.0779	25.00	105.5500	6.1468	150.00	200.00
92.37.GS.2023	16/04/2023	5.00	6.2090	103.7675	103.8150	6.1948	15.00	103.7650	6.2097	5.00	105.00
98.79.GS.2022	15/05/2022	5.00	6.7371	100.3025	100.4000	6.7208	25.00	100.4000	6.7208	5.00	105.00
98.88.GS.2031	17/09/2031	5.00	6.7865	99.1200	99.1900	6.7779	5.00	99.0000	6.8013	50.00	70.00
98.84.GS.2022	19/12/2022	10.00	6.1702	102.0000	102.0900	6.1406	10.00	102.0000	6.1702	10.00	50.00
92.39.GS.2028	11/01/2026	5.00	6.6494	104.8500	104.9950	6.6211	5.00	104.9000	6.6400	5.00	36.00
98.12.GS.2021	15/07/2021	10.00	6.0428	100.2250	100.3000	6.0014	5.00	100.3000	6.0014	25.00	25.00
98.17.GS.2023	12/06/2023	25.00	6.4197	99.1500	99.8000	6.2263	5.00	99.5175	6.3101	25.00	25.00
92.40.GS.2035	09/09/2035	0.00	0.0000	0.0000	105.6500	6.8155	5.00	105.6975	6.8108	5.00	15.00
98.24.GS.2022	15/02/2022	10.00	6.7624	108.6000	108.8500	6.7217	10.00	108.9000	6.7136	10.00	10.00
98.24.GS.2023	10/11/2023	0.00	0.0000	0.0000	112.9000	6.8101	10.00	112.3000	6.8714	5.00	5.00
98.33.GS.2022	21/09/2022	0.00	0.0000	0.0000	113.0000	6.8142	10.00	112.7000	6.8464	5.00	5.00
92.52.GS.2023	17/06/2023	5.00	6.8086	106.7500	107.0000	6.7817	5.00	106.7500	6.8086	5.00	5.00
92.50.GS.2024	10/08/2024	0.00	0.0000	0.0000	106.5000	6.8021	15.00	0.0000	0.0000	0.00	0.00
92.59.GS.2029	20/03/2029	0.00	0.0000	0.0000	106.7000	6.6352	5.00	0.0000	0.0000	0.00	0.00
92.61.GS.2020	09/05/2020	5.00	6.7865	106.2000	106.5000	6.7674	5.00	0.0000	0.0000	0.00	0.00
92.82.GS.2029	15/09/2029	0.00	0.0000	0.0000	108.5000	6.8007	10.00	0.0000	0.0000	0.00	0.00
92.88.GS.2024	15/12/2023	10.00	6.3714	104.9000	105.0000	6.3456	10.00	0.0000	0.0000	0.00	0.00
92.49.GS.2043	17/06/2043	5.00	6.9014	109.1500	109.7800	6.8502	5.00	0.0000	0.0000	0.00	0.00
98.19.GS.2020	16/01/2020	25.00	5.8722	100.9800	100.9800	5.8722	5.00	0.0000	0.0000	0.00	0.00

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Source: NDS-OM hosted at CCLL

I've highlighted the 2034 bond since we are interested in a 15-year time horizon. As the highlight indicates, the coupon rate is 7.5%. Again for simplicity, let us keep the bid-ask yield aside, we will anyway discuss these things in more detail when we deal with bonds. For now, you need to understand that the risk-free rate for the next 15 years is 7.5%.

To figure out the opportunity cost, we can add a risk premium of 1.5-2% more. The risk premium really depends on many things, keeping it simple for now. So, the opportunity cost would be –

$$7.5\% + 1.5\%$$

$$= 9\%.$$

Now that we have our opportunity cost sorted, we now need to answer the 2nd question i.e to figure the amount that we need to invest today at 9%, such that it will grow to Rs.75,000,000/- at the end of 15 years.

A trial and error method can figure this amount. Alternatively, we can use the concept of '**discounting**', wherein we discount Rs.75,000,000/- at 9%, which will give us the same answer.

The opportunity cost at which we discount is the '**discount rate**'.

By discounting we are essentially equating the future value of money (Rs.75,000,000/- in this example) to its equivalent value in today's terms, also called the '**Present Value**' of money.

The present value formula is –

$$\text{Present value} = \text{Future value} / (1 + \text{discount rate}) ^ (\text{time})$$

We know,

Future value = Rs.75,000,000/-

Discount rate = 9%

Time = 15%

We can plug these numbers in the equation –

$$= 75,000,000 / (1+9\%)^{(15)}$$

$$= 20,590,353$$

This means, the present value of Rs.75,000,000/- is Rs.20,590,353/-. In other words, Rs.75,000,000/- in today's terms is the same as Rs. 20,590,353/- in 15 years.

Given this, if someone makes an offer to buy the property at Rs.20,590,353/- today, then it is as good as receiving Rs.75,000,000/- in 15 years, because if Rs.20,590,353/- invested at the opportunity cost of 9%, will yield Rs.75,000,000/- in 15 years.

The concept of present value is very critical in finance and so is the concept of the future value of money, which we will discuss next.

3.3 – Future value of money

The future value of money is simply the inverse of the present value of money. Going by the real estate example, the future value of money helps us find an answer to a question like this –

What will be the value of Rs.20,590,353/- in 15 years from now?

To find an answer to this question, we again must find out the opportunity cost. Irrespective of future value or present value problems we are trying to solve, the opportunity cost remains the same.

So, 9% will be the opportunity cost.

To find the future value of money, we must compound the amount at the given rate of opportunity cost.

Recall from the previous chapter, the compounding formula –

= $P \cdot (1+R)^n$, which is also the future value, therefore –

Future value = $P \cdot (1+R)^n$

Where,

P = Amount

R = opportunity cost

N = Time period

Applying this,

= $20,590,353 \cdot (1+9\%)^{15}$

Now, before I post the answer to the above question, what does your intuition say the answer is?

Remember, when we worked out the present value of Rs.75,000,000/- at a 9% discount rate for 15 years, the answer was 20,590,353. Now, we

are trying to do the exact opposite i.e compound 20,590,353 at 9% for 15 years. So the answer has to be 75,000,000. When you do this math –

$$= 20,590,353 * (1+9\%)^{(15)}$$

$$= \mathbf{75,000,000}$$

This is the future value of money.

So in simple terms, if you had an option to receive 75,000,000 after 15 years or 20,590,353 today, then essentially both of these are the same deal.

3.4 – The offer

We started this chapter with a hypothetical situation. Your generous friend gives you two options –

Option A – He gives you Rs.10,000/- right away

Option B – He promises to give your Rs.10,000/- exactly two year from now

Chances are that you selected option B. However, can we tackle this situation better? Now that we know the concept of the time value of money aka the present and future value of money? Of course, we can.

The problem here is that we are trying to compare the value of Rs.10,000/- today versus Rs.10,000/- two years from now.

Now, if we were to opt for option A, we will have an option to invest this money in an interest-bearing instrument and grow this money. As of today, a two year fixed deposit will yield anywhere close to 7.5%. Given this, we now have to find out the future value of Rs.10,000/- at 7.5% opportunity rate (or the compounding rate).

$$= 10000 \times (1 + 7.5\%)^2$$

$$= \text{Rs.11,556.25/-}$$

This also means, that if we were to accept option B, we would be essentially accepting a value much lesser than Rs.10,000/-. A fair deal here would be either Rs.10,000/- today or Rs.11,556.25/- two years from now!

This also leads us to one of the most important conclusions in finance – Money today is far valuable than money tomorrow because today we have an option to invest this money and grow it at a risk-free rate.

3.5 – Real-life applications

So before we wrap up this chapter, let us consider a few real-life (like) situations and apply the concept of Future Value (FV) and Present Value (PV) of money. These are just made-up situations, you will appreciate the application of FV and PV better later in this module when the example will be probably more tangible.

Question – So assume you are saving for your daughter’s education at a foreign university. She is ten years today, and she is expected to go to the US when she is 25 years old, which is 15 years away. The tuition fees including the cost of living are expected to be roughly Rs.6,500,000/-. Given this, how much should you have today?

Answer – When you have a situation like this, the first thing to do is to figure out if this is a present value or a future value situation. This may not be very obvious at the surface, so this needs a bit more understanding. One easy way to figure that out is by analyzing the numbers.

We know the cost of education in 15 years will be Rs.6,500,000/-, so what is clear at this point is the future value of our cash requirement.

Given this, we need to figure out the present value of this cash requirement, so that we can save an appropriate amount today. We can do this by the simple present value formula we just learned –

Present value = Future value / (1+ discount rate) ^ (time)

The 7.5%, 15 year Government bond is a good proxy for the discount rate, so we will use the same.

Present value = $6,500,000 / (1 + 7.5\%)^{15}$

= Rs.21,96,779/-

So in today's rate, if we can manage to deposit a sum of Rs.21,96,779/-, we will have the required target funds in 15 years.

Of course, some of you reading this may be in an exact situation wherein you'd be saving for your child's future education. Do note, this is not the only way to save for it. The different ways to accumulate that corpus is the objective of this module, but for now, we are only concerned about gaining clarity about the concept of the present value of money.

Let us take up an example of the future value of money before we wrap this chapter up. Here is a situation you may be familiar –

Question – Your dad's close friend at the office also doubles up as a wheeler-dealer, and never hesitates to offer a financial deal/scheme. He comes home for a cup of tea and also decides to sell a financial product to the family. He says you need to invest a lumpsum amount of

Rs.200,000/- today and in 15 years, the family will get a gain of Rs.450,000/-.

So will you take up this deal and invest in it?

Answer – This is a tricky question because this can be solved by the application of both future value and present value concept. We will stick to the future value application. Quite straightforward this one –

Investment required today – Rs.200,000/-

Expected value from this investment – Rs.450,000/-

Given this, and the 7.5% opportunity cost, we need to figure if this investment makes sense. We will extrapolate Rs.200,000/- at the opportunity cost to figure this.

Future value = $200000 \times (1 + 7.5\%)^{15}$

= **Rs. 591,775.5**

Contrast this with the Rs.450,000/-, and the deal falls apart. You'll have to politely ask your dad's friend to enjoy his cup of tea and leave.

Now, here is something for you to think about – how will you solve the above problem by applying the concept of the present value of money?

Think about it and leave your comments below.

Key takeaways from this chapter

- Money today is always more valuable than money tomorrow because money today can be invested in interest-bearing instruments
- The time value of money is a core concept of personal finance
- Time value includes the present value and the future value of money
- The present value of money helps us figure the value of a future sum in today's terms
- Present value = Future value / (1+ discount rate) ^ (time)
- The discount rate = opportunity cost + risk premium
- Give a certain amount of money today, the future value of money helps us figure out its value at a future date
- Future value of money and the compound interest concept works the same way
- Future value = $P \cdot (1+R)^n$
- R in the above formula is the opportunity cost, whereas the R used in compound interest is the growth rate. This is the only difference between Future value and compound interest.

CHAPTER 4

The retirement problem (Part 1)

4.1 – Defining the problem

If you think about it, success in personal finance boils down to three things –

Your ability to see through the numbers

Your risk-taking ability, and

Common sense

I hope that the previous two chapters have laid down a foundation, which will help you look through the numbers.

The risk-taking ability is merely a function of your knowledge and the way you continuously expand it. The more you read and understand, the more you get familiar with risk and the better equipped you are to handle risk. The extent of risk you assume can make or break your financial fortunes. Of course, we will discuss more as we proceed through this module.

Common sense is something applicable to all aspect of life and not just finance; we will leave it at that 😊

So, given these three key points, we will now steer our way into learning the vast set of things that make up personal finance, and hopefully, this will help us develop our instincts on all the three counts required for success in personal finance.

Finding a starting point to start this journey is a challenge given that the vastness of this topic. Hence, in my opinion, the best way to proceed is by identifying a real-life financial problem and then finding a solution for it.

The process of finding the solution will open up many different learning windows, which will help us understand the core concepts of personal finance.

So let's get started.

I'm assuming most of you would be in different stages of your working life, some would be starting (or about to begin your careers), some may be few years into work life, and others probably halfway through your work life.

Regardless of where you are, one of the common goals in life is to ensure that you retire into a happy and content life. The fact that you have retired should not stop you from leading a particular desired lifestyle. You should continue to lead a lifestyle that you think you deserve.

If the above is true, then it implies that you need the same amount of disposable income, as you would have when while you were working. Lesser disposable income wants a compromised post-retirement lifestyle, which none of us wants.



Let us put this in context and assign numbers to it, and elaborate this a bit further.

Assume you will work for the next 25 years (these are your income-generating years), post which you will retire. After you retire, you expect to live for say 20 more years. Assume, the cash required today to lead your lifestyle is Rs.50,000/- per month. This is cash post taxes, fixed expenses, utility bills, etc. This is your disposable income per month.

The idea is that after 25 years, for the next 20 years of your post-retirement life, you'll need the same Rs.50,000/- every month, this is about Rs.600,000/- per year.

Some of you may disagree or may have a different opinion on how much you need post-retirement; I understand that but stick with for now, please.

Let me put this tabular format for you to understand this better –

Current year	2019
Number of working years	25
Year of retirement	2044
Number of years post-retirement	20
Final year	2063 (including 2044)
Monthly cash requirement	Rs.50,000/-
Yearly cash requirement	Rs.600,000/-

I'm sure all of you reading would agree that this is a real-life problem and we all need to address this.

If you think about this, there are two parts to this real-life problem –

How much retirement corpus one needs to have accumulated by the time of retirement, i.e. the beginning of the year 2044?

How does one accumulate the required money?

Some of you may be tempted to answer the first part straight away –

It is Rs.600,000/- per year (50,000 per month for 12 months) and for 20 year it is Rs.12,000,000/- ($600,000 * 20$) or 1.2Cr. So if we were to accumulate a retirement corpus of 1.2Cr by the year 2044, we could easily sail through the next 20 years of post-retirement life by burning Rs.50,000/- per month, all the way to 2063.

Well, if only life was that simple J

Given the above, the question is, how much cash reserves you'd need at the end of 25 years, i.e. in the year 2044, such that you can have Rs.50,000/- every month till the year 2064.

In this chapter, we will address the required corpus bit and figure out the amount needed at the start of the retirement year. In the next section, we will figure out how this corpus gets generated.

4.2 – Inflation and other realities of life

In the absence of inflation, the math above would work like a charm, i.e. in the year 2044, a sum of Rs.12,000,000/- would help us sail through our retirement years at ease, i.e. at the rate of Rs.50,000/- per month up to 2064.

However, inflation is real, and this makes life complicated in multiple ways. Inflation is the phenomenon, which makes things expensive. For example, a plate of pav bhaji at a restaurant may cost Rs.50/- today, but the same may cost Rs.55/- at the very same restaurant the next year. This marginal increase in cost is attributed to inflation. In other words, the purchasing power of money has reduced over one year.

This is true, all else equal, money today will always be less valuable at a future date. For this same reason, all the stories of our parents and grandparents enjoying a full meal for less than Rs.2/- exists J

This implies, today's Rs.50,000/- will not be Rs.50,000/- tomorrow. It will naturally reduce owing to inflation. For this exact reason, we cannot only multiply the amount required with the number of years and arrive at a figure.

4.3 – The Future value

To find a solution, we need to find out the Rs.50,000/- equivalent 25 years from now. This is what we learned in the previous chapter.

The expected cash requirement is as shown below –

Year of retirement	Year	How many years away	Corpus required as per today's value
01	2044	25	Rs.600,000/-
02	2045	26	Rs.600,000/-
03	2046	27	Rs.600,000/-
04	2047	28	Rs.600,000/-
05	2048	29	Rs.600,000/-
06	2049	30	Rs.600,000/-
07	2050	31	Rs.600,000/-
08	2051	32	Rs.600,000/-

09	2052	33	Rs.600,000/-
10	2053	34	Rs.600,000/-
11	2054	36	Rs.600,000/-
12	2055	37	Rs.600,000/-
13	2056	38	Rs.600,000/-
14	2057	39	Rs.600,000/-
15	2058	40	Rs.600,000/-
16	2059	41	Rs.600,000/-
17	2060	42	Rs.600,000/-
18	2061	43	Rs.600,000/-
19	2062	44	Rs.600,000/-
20	2063	45	Rs.600,000/-

The table is quite easy to understand. Look at the first row, it says, the 1st retirement year is 2044, and it is 25 years from the current year i.e.2019. The corpus required for 2044 is Rs.600,000/-. This is a constant amount needed for all the retirement years.

The 2nd retirement year is 2045, which is 26 years away from the current year (2019). So on and so forth.

Now the task at hand is to estimate the value of Rs.600,000/- 25 years later, 26 years later, 27 years later, and for each year up to the final year, given a certain level of inflation. Remember, these are all the future value of money.

4.4 – Estimating the future value of the corpus

To proceed further from this point and estimate the corpus required at the start of the retirement year, i.e. 2044, we need to have a view on the long-term inflation.

I would be comfortable pegging the long-term average inflation value between 4-5%. Now, the question to answer is – given 5% inflation, what would be the value of Rs.600,000/- 25 years from now.

Similarly, given 5% inflation, what would be the value of Rs.600,000/-, 26 years from now, so on and so forth, all the way to the 20 years of retirement.

If you recollect from the previous chapter, we are talking about the future value calculation here. Once we have all the future values, we need to sum them up to get the total corpus required at the start of the retirement year.

Let us do this for the initial 2-3 years and then take the help of MS Excel to figure the rest.

From the previous chapter, the future value formula is –

$$\text{Future value} = P \cdot (1+R)^n$$

Where,

P= Principal i.e. Rs.600,000/-

R = opportunity cost, in this context it is the inflation rate, so 5%

n = Period, 25 in this case

Plugging in these value –

$$600,000*(1+5\%)^{(25)}$$

$$= \text{Rs.}2,031,813/-$$

So, in 25 years, if you have Rs.2,031,813/-, then it is as good as having Rs.600,000/- today.

For the 2nd year –

$$600,000*(1+5\%)^{(26)}$$

$$= \text{Rs.}2,133,404/-$$

So, in 26 years, if you have Rs.2,133,404/-, then it is as good as having Rs.600,000/- today.

So on and so forth.

Here is an excel snapshot that shows how the numbers stack up for all the other years, but before you look at it, can you guess how much this amount can be?

For most people I've asked this question, they get the value way off the mark, this is because they cannot comprehend the fact there is inflation and compounding (future value) at play here.

So go ahead and give it a shot, take a guess on how much the retirement corpus should be, once you've answered this, then take a look at the actual number; hopefully, it should match, if not, don't worry, we all have some learning to do.

Calculations:

Retirement year	How many years away from today	Yearly amount required	Future value
2044	25	600,000	1,001,811
2045	26	600,000	1,113,404
2046	27	600,000	1,246,074
2047	28	600,000	1,392,077
2048	29	600,000	1,552,681
2049	30	600,000	1,729,185
2050	31	600,000	1,922,814
2051	32	600,000	2,134,965
2052	33	600,000	2,366,911
2053	34	600,000	2,620,009
2054	35	600,000	2,895,609
2055	36	600,000	3,195,090
2056	37	600,000	3,519,844
2057	38	600,000	3,871,286
2058	39	600,000	4,252,851
2059	40	600,000	4,667,993
2060	41	600,000	5,119,191
2061	42	600,000	5,609,951
2062	43	600,000	6,143,800
2063	44	600,000	6,724,290
2064	45	600,000	7,355,005
Total Corpus required at the start of the retirement year (i.e. 2064)			72,574,809

As you can see, the corpus required at the start of the retirement year is a staggering 7.2Cr!

The numbers drastically change if we change the inflation assumption and of course the actual amount of our lifestyle demands.

4.5 – Oversimplification

Some of the things are oversimplified and exaggerated here. For instance, having a constant monthly requirement of 50k may not be accurate. As we age, we would prefer to sit at home and sip a drink as opposed to hanging out in the coolest and trendiest bar in town. Or we may cut down on all the outside eating, watching movies, etc. We may not want to buy the latest denim from levis or the newest pair of sneakers from Nike. Who knows?

Our requirements could be very different, and from whatever I've read, observed, and understood, the money required for older people is lesser than the younger ones. So we may not need 50K per month when we retire.

But here is the thing with personal finance, it is best to take a conservative approach and figure out the outcome. If we manage to lead a comfortable but yet a frugal life at a later point, its great, else we would have anyway budgeted for it.

In the next chapter, we will understand ways to generate this income.

[Download](#) the excel sheet used in this chapter here.

Key takeaways from this chapter

- Retirement is a real-life financial problem that we all need to address
- Inflation complicates things. Money today is not the same tomorrow
- The inflation diminishes the purchasing power of money
- Use the future value of money to estimate the worth of money today, 'n', many years later.

CHAPTER 5

The retirement problem (Part 2)

5.1 – Assumptions

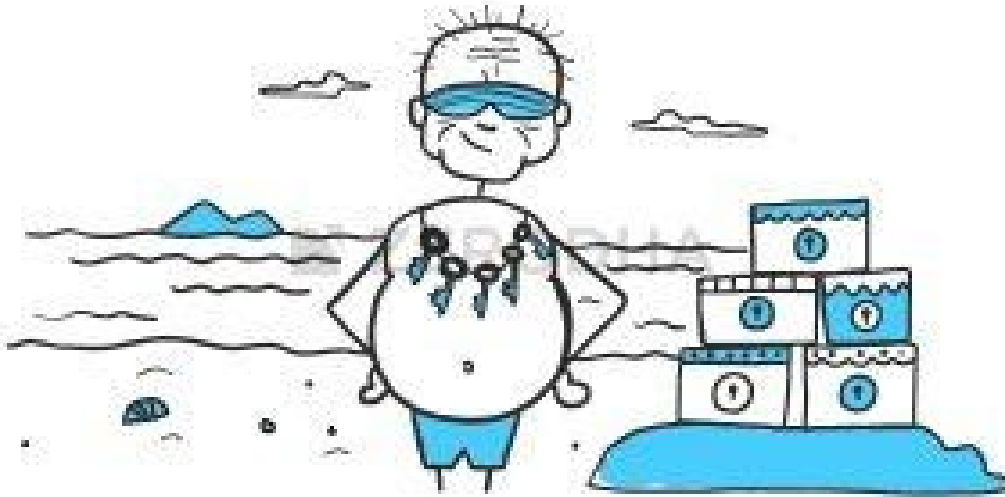
We are at an exciting point now. The previous chapter helped us estimate (roughly) the corpus required for one to retire comfortably, without drastically changing the post-retirement lifestyle.

One can argue that certain aspects were overlooked while estimating the post-retirement corpus, which is ok for now because this helps us determine the retirement corpus on a conservative basis.

The idea, of course, is to understand personal finance so well that we can plugin things as we progress and eventually get the corpus number right.

In the previous chapter, we figured that we need roughly 7Cr by retirement; in this chapter, we address the technique to generate the same. It must be quite evident to you by now that to create the retirement corpus by the target retirement year; we need to make investments starting today.

The investments that we make today should ideally spread across multiple assets. This is called the multi-asset portfolio, which includes – fixed deposits, gold, real estate, equities, cash, and cash equivalents. The overall growth that you experience will then be an aggregate across all these assets.



Let me explain a bit more before we get back to the retirement problem.

Assume your net worth is distributed across multiple assets –

30% of your net worth is invested in real estate

8% of your net worth is in the fixed deposit

8% of your net worth is from gold

13% of your net worth is in equities

Cash is 4%

The numbers assigned are all arbitrary, to drive the concept, so don't sweat over it 😊

Now, each of these assets grows at a specific rate. Needless to say that the growth rates differ for each of these assets. The question is, what is the overall growth given this portfolio of assets?

To answer this, we need to have an expected growth rate for each of these assets.

My long term (10 plus years) growth expectation (CAGR) from these assets are as follows –

Real estate – 8-10%

Fixed Deposit – 6-7%

Gold – 8-9%

Equities – 10-11%

Cash – 0% (in fact cash de grows if you consider inflation)

You can develop your own opinion on the growth rates for these assets by looking at the long-term trends and by developing an idea on their future performance. But here is an advise, when you work with predictions/projections of any sort in personal finance, always keep the number on a conservative basis.

For example, frankly, I know equities, in the long run, will do much better than 11% CAGR, but I'll work with a 10-11% range. The advantage here is that you build a future based on conservative assumption, anything better is only a bonus.

Anyway, the overall portfolio growth is the sum product of the weight of each asset and the expected return. Therefore –

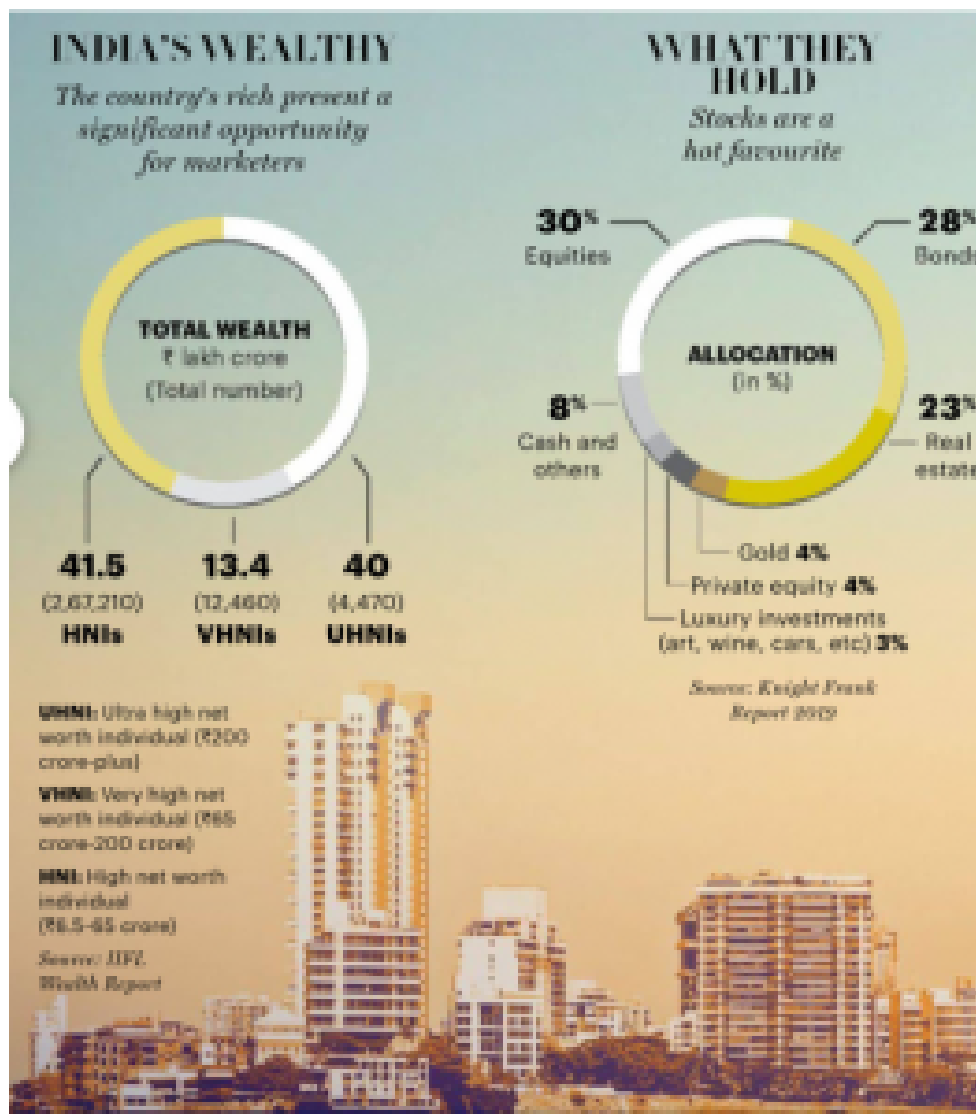
$$= 30\% * 10\% + 8\% * 7\% + 8\% * 9\% + 13\% * 11\% + 4\% * 0$$

$$= \mathbf{8.3\%}$$

So as you can see, the combined (diversified) portfolio with multi-assets, generates an overall return of 8.3%.

Of course, change in asset allocation has an impact on portfolio growth. We have discussed this multiple times, won't get into that discussion now.

By the way, check this to know how people generally divide their net worth across a diverse set of assets –



The infographic above mainly talks about the HNI and above category; however, if you walk into any financial planning firm, you are likely to get a somewhat similar diversification plan.

While a multi-asset portfolio is highly desirable, we won't get into that discussion just yet. This is slightly complex, and we are too early in this module to talk about it.

For the retirement problem, we will make one fundamental assumption. The assumption is that we will look at only equity for building the retirement corpus. The exposure to equity is in the form of making systematic investments in a growth-oriented equity mutual fund.

If you do not understand 'systematic investments in a growth-oriented equity mutual fund', then do not worry. Going forward in this module, we will discuss this in detail.

Since equity is the only asset we are dealing with in this retirement problem, we need to assign an expected growth rate to this asset. I think a 10-11% CARG is a fair expectation, especially when the holding period is long, i.e. more than ten plus years.

So let's work with this number for now.

5.2 – The setup

A quick recap of the retirement problem, before we proceed. In the previous chapter, we figured that we need funds to the tune of 7Cr to lead a comfortable retired life. We call this a retirement corpus. We defined 'comfortable' by ensuring we have at least Rs.50,000/- per month for the 20 years post-retirement.

The next step is to figure out how one can generate a retirement corpus. Remember, we are starting our journey to save for retirement today, and we have 25 years to build this corpus. Twenty-five years is 300 months.

For now, we will rely upon investing in an equity mutual fund, in a systematic way to generate this retirement corpus. To solve this problem, we need to make a few assumptions. They are –

We have a steady job which pays us a salary every month

We are employed until the year of our retirement

Our primary savings vehicle is regular investments in equity mutual funds

We get yearly hikes in our pay

Every year we will increase the investments in equity mutual funds by 10%

The increase in savings happens every January

I know many of you may be concerned with these assumptions here, especially about the job and the hikes, but then, that's an underlying assumption, without which we cannot proceed 😊

So how do these assumptions translate to action? Here is how it looks –

Sl No	Months	Months	Investment
1	300	Jan	5000
2	299	Feb	5000
3	298	Mar	5000
4	297	Apr	5000
5	296	May	5000
6	295	Jun	5000
7	294	July	5000
8	293	Aug	5000
9	292	Sept	5000
10	291	Oct	5000
11	290	Nov	5000
12	289	Dec	5000

Let me explain this table. The very first row reads like this –

It is January, and I'm making my very first investment of Rs.5000/- today. I won't be touching this investment until I retire, which is 25 years away or about 300 months away.

The 2nd row reads similar – Its February, I'm making the 2nd savings installment for the year, i.e. Rs.5000/-. Retirement is now 299 months away.

I want you to recognize the fact that the 'months away' can be looked at from a different perspective. If you realize, these are the number of months during which your money can grow. For example, the very first installment you make has the luxury to build (or compound) for 300 full months. The next month's savings can grow only for 299 months, 3rd installment has only 298 months to grow. So on and so forth.

Now, the 5th and 6th assumptions state that we are increasing the savings rate by 10% every January. This means, if we are starting with Rs.5000/- for year 1, the 2nd year we bump this up by 10%, hence for the 2nd year we invest Rs.5,500/-.

This is how it looks –

SI No	Months	Months	Investment
1	300	Jan	5000
2	299	Feb	5000
3	298	Mar	5000
4	297	Apr	5000
5	296	May	5000
6	295	Jun	5000
7	294	July	5000
8	293	Aug	5000
9	292	Sept	5000
10	291	Oct	5000
11	290	Nov	5000
12	289	Dec	5000
13	288	Jan	5500
14	287	Feb	5500
15	286	Mar	5500
16	285	Apr	5500
17	284	May	5500
18	283	Jun	5500
19	282	July	5500
20	281	Aug	5500
21	280	Sept	5500
22	279	Oct	5500
23	278	Nov	5500
24	277	Dec	5500
25	276	Jan	6050
26	275	Feb	6050
27	274	Mar	6050

The month counting continues the same way. For example, the Rs.5,500/- investment we make in the 2nd year January has only 288 months to grow or compound.

I hope you get this flow for now.

So what happens after you make these investments? Well, as per the assumption, each of these monthly investments we make, grows at 11% CAGR (compounded annual growth rate), for the respective months.

For example, the very first investment that we make, i.e. Rs.5000/- gets to grow at the rate of 11%, for 300 months. So what would be the value of this investment at the end of 300 months?

Well, by now, you should recognize that we can apply the concept of the future value of money and get the answer. The future value of money formula is –

$$\text{Future value} = P \cdot (1+R)^n$$

Where,

Principal (**P**) = Rs.5000

Growth rate (**R**) = 11% per annum

Time (**n**) = 300 months. However, this formula considers time in years. Hence we need to express 300 months in years, therefore $300/12 = 25$

$$= 5000 \cdot (1+11\%)^{(300/12)}$$

$$=\text{Rs.67,927/-}$$

Let us do this for the 2nd installment as well; everything stays the same except for the time component –

$$= 5000 \cdot (1+11\%)^{(299/12)}$$

$$=\text{Rs.67,339/-}$$

This is how the table looks –

Sl No	Months	Months	Investment	Growth Rate	Future Value
1	300	Jan	5000	11%	67,927
2	299	Feb	5000	11%	67,339
3	298	Mar	5000	11%	66,756
4	297	Apr	5000	11%	66,178
5	296	May	5000	11%	65,605
6	295	Jun	5000	11%	65,037
7	294	July	5000	11%	64,474
8	293	Aug	5000	11%	63,915
9	292	Sept	5000	11%	63,362
10	291	Oct	5000	11%	62,813
11	290	Nov	5000	11%	62,269
12	289	Dec	5000	11%	61,730
13	288	Jan	5500	11%	67,315
14	287	Feb	5500	11%	66,732
15	286	Mar	5500	11%	66,155

Now, if you add up all the future values, you get the corpus accumulated for your retirement. Before I show you the number, what is your guess? Does Rs.5000/- as the starting amount make the cut? Do you think it gives you the target corpus of Rs.7Cr?

If you are doubtful, then you are right. It does not cut the mark. It's way off the mark –

Corpus Estimation

Sl No	Months	Months	Investment	Growth Rate	Future Value
1	300	Jan	5000	11%	67,927
2	299	Feb	5000	11%	67,339
3	298	Mar	5000	11%	66,756
4	297	Apr	5000	11%	66,178
5	296	May	5000	11%	65,605
6	295	Jun	5000	11%	65,037
7	294	July	5000	11%	64,474
8	293	Aug	5000	11%	63,915
9	292	Sept	5000	11%	63,362
10	291	Oct	5000	11%	62,813
11	290	Nov	5000	11%	62,269
12	289	Dec	5000	11%	61,730
13	288	Jan	5500	11%	67,315
14	287	Feb	5500	11%	66,732
15	286	Mar	5500	11%	66,155
16	285	Apr	5500	11%	65,582

Assumption	
Starting monthly SIP (MR)	5000
Equity Increase	11%
Retirement savings (CRK Cr)	1,74,12,000



So what should we do? How do we ensure we reach the target retirement corpus? Well, we can do three things –

We save for a much longer period, say 30 or 35 years. However, this may not be viable as we won't have a sustainable source of income for these many years

Increase the rate of return, maybe from 11% to 14%, but then is like robbing yourself of your future. So we won't commit this sin

Increase savings, this means a frugal life today for a comfortable and financially independent life tomorrow. This is an option we can work with this.

So from saving Rs.5000 per month, let us bump this up to say Rs.15,000/- per month. Here is how the numbers stack up –

Corpus Estimation

Sl. No.	Months	Month	Investment	Growth Rate	Future Value
1	100	Jan	15000	11%	203,782
2	101	Feb	15000	11%	201,817
3	102	Mar	15000	11%	200,268
4	103	Apr	15000	11%	199,144
5	104	May	15000	11%	198,315
6	105	Jun	15000	11%	197,711
7	106	July	15000	11%	197,311
8	107	Aug	15000	11%	197,105
9	108	Sept	15000	11%	197,086
10	109	Oct	15000	11%	197,240
11	110	Nov	15000	11%	197,560
12	111	Dec	15000	11%	198,051
13	112	Jan	15000	11%	198,716
14	113	Feb	15000	11%	199,557
15	114	Mar	15000	11%	200,574
16	115	Apr	15000	11%	201,766
17	116	May	15000	11%	203,142
18	117	Jun	15000	11%	204,713

Assumption	
Starting monthly SIP (₹)	15000
Yearly Increase	11%
Estimated savings (₹ till 4 yrs)	₹. 241,68,004



There is a significant improvement, but still not close to the 7Cr mark. We can try this with Rs.20,000/-

Corpus Estimation

Sl No.	Month	Month	Investment	Growth Rate	Future Value
1	200	Jan	20000	11%	271,709
2	201	Feb	20000	11%	269,017
3	202	Mar	20000	11%	267,010
4	203	Apr	20000	11%	264,712
5	204	May	20000	11%	262,410
6	205	Jun	20000	11%	260,148
7	206	July	20000	11%	257,896
8	207	Aug	20000	11%	255,660
9	208	Sept	20000	11%	253,448
10	209	Oct	20000	11%	251,254
11	210	Nov	20000	11%	249,078
12	211	Dec	20000	11%	246,911
13	212	Jan	23000	11%	268,261
14	213	Feb	23000	11%	266,010
15	214	Mar	23000	11%	264,010
16	215	Apr	23000	11%	262,017
17	216	May	23000	11%	260,016
18	217	Jun	23000	11%	257,808
19	218	July	23000	11%	255,617
20	219	Aug	23000	11%	253,450
21	220	Sept	23000	11%	251,295

Assumption	
Starting monthly SIP (INR)	20000
Yearly Increase	11%
Retirement savings (INR Cr)	6.98488479



As you can see, starting at Rs.20,000/- per month, we get close to the 7 Cr mark, which upon retirement will yield us Rs.50,000/- per month for 20 years.

5.3 – Are you serious?

Saving Rs.20,000/- a month, that too as a starting amount may sound crazy to many, especially for people who are just starting their careers. After all, you've just started your career, started seeing a steady cash flow, and you are expected to park the bulk of it for retirement?

How fair is that?

Before it demotivates you any further, let me tell you. It is not all that lousy



Let me make an assumption here; if you are starting your career now, then probably you are 24 or 25 years old. This means you have a long runway before you retire. Even if you retire by 60, you mostly have 35 years to retire.

Out of these 35 years of service, even if you invest for 30 years, you will be placed much better. You can choose to start with Rs.10,000/- per month.

Check the snapshot –

zerodha.com/varsity

Corpus Estimation

Sl No	Months	Months	Investment	Growth Rate	Future Value
1	060	Jan	10000	11%	238,833
2	066	Feb	10000	11%	236,841
3	072	Mar	10000	11%	234,876
4	077	Apr	10000	11%	232,939
5	082	May	10000	11%	231,036
6	087	Jun	10000	11%	229,162
7	092	July	10000	11%	227,314
8	097	Aug	10000	11%	225,490
9	102	Sept	10000	11%	223,687
10	107	Oct	10000	11%	221,908
11	112	Nov	10000	11%	220,151
12	117	Dec	10000	11%	218,416
13	120	Jan	11000	11%	235,804
14	127	Feb	11000	11%	234,896
15	135	Mar	11000	11%	232,998
16	141	Apr	11000	11%	231,116
17	147	May	11000	11%	229,250

Assumption	
Starting monthly SIP (₹)	10000
Yearly Increase	11%
Retirement savings (₹) (₹)	6,00,00,000



Starting your career early, gives you two powerful levers to operate – time and money. You can start with a small amount and build on it, eventually, it will yield you a similar result.

What if you are in the middle of your career and you are looking at retirement sometime over the next 10 or 15 years? Well, unfortunately, you do not have many options expect to save large chunks of your cash flow.

But remember, this entire conversation is an oversimplification to help us get started. There are many angles to this story. For example, you may acquire property by inheritance, which earns you a rental income for the rest of your life or you can get a huge lump sum amount at retirement, thanks to PF and stuff. This retirement amount gets parked in a savings account or a fixed deposit, which gives you yearly cash flow.

The objective of this module is to help you solve this puzzle so that you can plan your financials efficiently for yourself and your family.

5.4 – Next step

Irrespective of the lump sum cash or a yielding rental property landing up in your lap by retirement, investing in equity is something that you cannot miss.

I firmly believe that 'equity' as an asset class will outperform all other assets and shine through. Equity has to be a part of your long term portfolio.

The best way to gain exposure to equity is by investing in mutual funds via a systematic investment plan. Of course, there are many other variants and techniques for this.

Given this, over the next few chapters, we will deep dive into mutual funds and get a thorough understanding of mutual fund investing. This discussion will include things like developing a mindset for mutual fund investment, building a mutual fund portfolio, goal-based portfolio, fund analysis, direct vs regular, growth vs dividends, etc.

Once we understand mutual funds, we will steer our way to learn other critical components of personal finance such as life insurance, health insurance, pension funds, EPF, ETFs etc.

So as you can imagine, we have a long learning path ahead 😊

Key takeaways from this chapter

- In a multi-asset portfolio, the aggregate portfolio return is the sum product of the asset weight and the asset's expected returns
- Equity exposure is a critical component in long term wealth creation
- Investing small amounts of money regularly leads to a massive retirement corpus

CHAPTER 6

Introduction to Mutual Funds

6.1 – Flashback

The retirement problem chapter has laid down a learning path to understand personal finance. We know now that to build a retirement corpus, long-term investments in mutual funds is inevitable. Given the pivotal role mutual funds plays in defining our financial welfare, it is completely justified to spend some time to learn about mutual funds. The learning that I'm talking about is something that goes beyond normal mutual fund investors would know. The objective here is to help you know the basics plus a little more. Hence, the topics I'd like to cover here are –

What is a mutual fund?

Who runs a mutual fund and why?

Regulatory aspects around a mutual fund from an MF investor's perspective

The different types of mutual funds – Equity, Debt, FoF, Hybrid, Liquid

How to analyze a mutual fund? – Risk, return, ratios, exposure

Factors that matter – MF ranking, Direct vs Regular, Growth vs Dividend

Setting long term return and risk expectations

Constructing goal-based mutual fund portfolios

Logistics – SIP, SWP, STP, CAS statements, DEMAT vs non-DEMAT mode

Tracking investments

Mutual fund taxation

Of course, I will add more topics if there is a need for it.

Given this, let us get started on the very first topic i.e. to understand what a “mutual fund” really means.

I’m making an assumption here that you know nothing about mutual funds. I’m assuming that this is your very first attempt to learn about mutual funds, hence we are starting from scratch. You can skip this chapter if you know what a mutual fund is.

Before we start learning about Mutual funds, I’d like to digress a bit and narrate a personal story dating back to 2008-09.

I’m not sure how many of you reading this were trading, investing, tracking or remotely connected to the stock markets in the year 2008. The year 2008 was very interesting (perhaps scary) for people sitting on the sidelines and watching all the action, but for people involved and had their livelihoods tied to the market, 2008 was apocalyptic. The financial services industry was in absolute pits, and I was in the city of London, which was the epicentre of the financial meltdown. I was relatively new in the industry, had very few industry connections, and hardly any working experience in the UK. When the industry-wide job cuts started, I knew it would be me sooner or later. The good thing was I just didn’t sit on the sideline wondering if I would get the layoff notice. I knew it was a matter of time.

Given the situation, I had decided to head back to India. Of course, not that there many options for me to choose.

By Feb 2009, I was back in Bangalore, luckily I found myself a spot to sit and trade the markets with the (now) legendary Kamath Associates (pre-Zerodha

days). Soon, I was in the thick of the action and I was trading anything and everything that moved on the Indian exchanges.

The capital to trade was mainly my own plus a bit from my close circle.

While trading was something I enjoyed, I found investing super interesting. I spent a lot of time reading the annual reports and understanding of businesses. This effort included learning a bit of accounting to help me read the company's financial statements. I soon realized that stock picking and building long-term equity portfolio was something that I wanted to for a living.

I slowly branched out from active trading and started building an investing practice. I moved out of Kamath Associates to do this full time. Of course, at that point, Kamath Associates dissolved and Nithin Kamath started Zerodha.

Over time I built a carefully crafted equity portfolio for myself. I had a thesis for each investment made. I was aware of the growth drivers and the risk parameters for each stock I had invested.

While I started doing this for myself, I soon extended my help in setting up an equity portfolio for my family members and later to my close friends. I had few things going right for me and soon people around me and their immediate circle knew I was a good option to consider for equity investing. It was in November 2010, that I decided to do this as a profession.

My idea was to help people build an equity portfolio, manage it on their behalf, grow it, review it periodically, assess the risk, and do everything possible with a single point agenda – to help them generate wealth over a long period.

In short, I wanted to be a 'Fund Manager', help people build wealth by investing their money in the stock market.

I continued my journey, by 2012, I was fortunate enough to onboard a bunch of clients and managed a decent sum of money. I was taking an independent decision on which stock to invest in and which stocks to exit. I was deciding how much to invest in each stock and for how long. On the first Saturday of every month, I'd send a report to all my clients informing them of how their portfolio was performing in the market.

I was indeed a fund manager for at least 20-25 families, and I felt happy and responsible being in that position.



However, there was a problem lurking. As per the regulators, i.e. SEBI, anyone aspiring to be a fund manager and manage portfolios, had to procure a license from SEBI. This license is called the 'Portfolio Management Service' (PMS) license. Probably I'll discuss PMS later in the module. Given my situation, the cost of applying for this license and the associated net worth

requirements was prohibitive. Hence, I was forced to shut shop in the subsequent years and return the investment capital to the clients.

Anyway, thanks for reading through my rather boring flashback, but I had a reason to share this with you. I want you to identify a few things. As a self-proclaimed fund manager, I was trying to –

1. Researching stocks
2. Build an investment thesis for each stock
3. Estimate the amount of money to invest in each stock
4. Build an equity portfolio
5. Track individual stock and overall portfolio
6. Measure the returns, performance, and risk at periodical intervals
7. Report to clients

The points mentioned above captures the role of a typical fund manager. At this point, I want you to be very clear about the role of a fund manager.

Also, a quick reminder – we are in the process of understanding what ‘mutual funds’, means and I hope I’m heading in the right direction, so please do stay with me on this 😊

6.2 – Large scale fund manager

I guess most of us at some point would have paid a visit to the neighborhood bakery to buy either a loaf of bread or a pack of biscuit baked by the baker. These biscuits usually have a local and unique taste to it, not available elsewhere in the city. It is a local thing. It is nearly impossible for a person in another city to source the same biscuit.

However, think of the biscuits made by Britannia, a large-scale biscuit and cookie manufacturer. It does not matter whether I'm in Bangalore or Delhi. The same Britannia biscuit is available throughout the country. It tastes the same, has the same packaging, looks identical, and weighs the same. Not a grain of salt or sugar varies from one pack to another. It is a highly standardized offering.

Britannia is a large-scale baker, with a distribution network across the country. The baker in your neighborhood is a local baker, with the residents as his loyal customers. He does not have a distribution network like Britannia. Now think about my 'fund management' affair, I guess you would agree that I was comparable to the local baker, catering to a small set of customers in the neighborhood.

On similar lines, there are "fund managers", on a large-scale basis who can cater to millions of customers and offer the same service to each one of these customers.

Customers in the fund management context are people who are looking for 'fund management', services.

These large-scale fund managers typically operate via a mutual fund structure. Think of the mutual fund structure as a method to offer fund management at scale. I will shortly discuss this in more detail, but before that, let us draw a quick analogy to reestablish the things we have learned so far –

MF Analogy

Mutual example				
Situation	What	Offered by	Product	Availability
Local shop	Biscuit	Local bakery	Biscuit (some food quality)	Local
Large scale baker	Biscuit	Biscuit company (Britannia)	Standard packaged biscuit	Easily available to all

MF Example				
Situation	What	Offered by	Product	Availability
Local fund manager	Manage your money	Local company, registered with SEBI	Customised fund management	Local
Large scale fund manager	Manage your money	Asset Management Company (AMC), registered with SEBI	Mutual fund units	Easily available to all

At this point, all I want you to understand is this –

1. A fund manager is responsible for your funds
2. An Asset Management Company (AMC), is a company where a fund manager works and manages your money
3. Think of the ‘Mutual Fund structure’, as a vehicle or mechanism to manage your funds

I hope so far so good. We will now proceed to understand how a mutual fund company is structured and functions. I understand that you do not need to know about this, as long as you know how to invest in a mutual fund. Fair enough, but I have a slightly different objective here i.e. to make you a little more knowledgeable than a normal MF investor.

It is like this, you can buy a DSLR camera, turn on the auto mode and start clicking the pictures. Chances are you will end up taking decent pictures. However, if you take the effort of knowing a little more about your camera, you may end up using your camera more efficiently, which may perhaps result in a brilliant photograph.

Therefore, in my opinion, knowing a bit about the structure of an AMC will not go waste. It is one of those ‘good to know’, things in life 😊

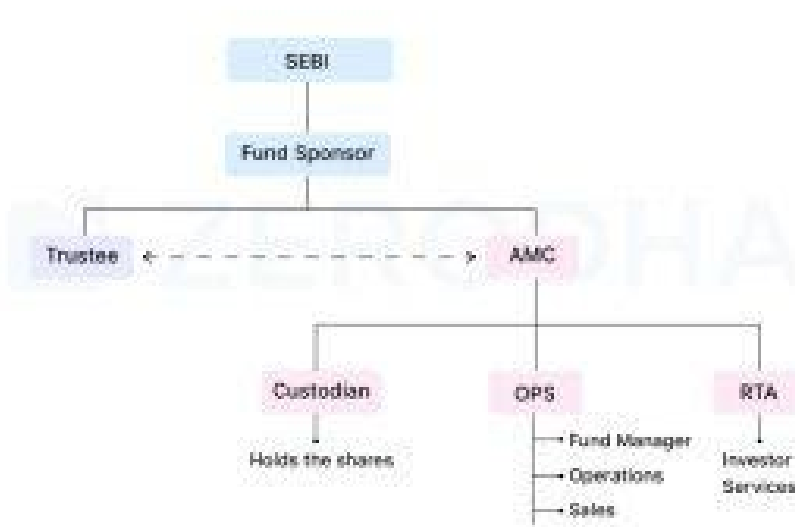
6.3 – Deconstructing an AMC

Setting up an Asset Management Company (AMC) is a very daunting task. You cannot wake up one day and decide to start an AMC. There are prerequisites to set up an AMC and these prerequisites are laid down by 'The Securities and Exchange Board of India' (SEBI). SEBI is the governing authority for all the AMCs in India. SEBI holds the rights to grant or not grant the AMC license to a corporate body.

The process of setting up an AMC is highly stringent and rightfully so. After all, there is a large scale public money at stake and the regulators need to ensure this money is managed by responsible entities.

In their effort to bring in transparency and accountability, SEBI has proposed a multi-tier structure for an AMC. Here is the structure of an AMC –

- AMC Structure -



Fund sponsor – Think of the fund sponsor as the main promoter of the Asset Management Company. The fund sponsor is a corporate body, which

expresses a desire to set up an AMC. The fund sponsor approaches SEBI for setting up the AMC. The fund sponsor has to follow the 2 stage application process by furnishing all the details SEBI would require. At the end of stage 1, SEBI either denies the licenses or grants an 'in principle', approval for the same.

Once the in-principal approval is issued, SEBI demands more documents and details for further scrutiny. Finally, after the stringent due diligence process, SEBI can again decide to either grant or deny the AMC license to the fund sponsor.

Trustees – Once the fund sponsor procures the license from SEBI, they need to register a trust and appoint a board of trustees. The trust ensures that the AMC formed by the fund sponsor carries out its duties in the right spirit and works in the interest of the clients of the AMC (unit holders). SEBI also mandates that the trustee of the fund is independent and not associated with the sponsor in any way.

AMC – The trust in consultation with the fund sponsor appoints an AMC. The AMC is also called the 'Investment Manager'. The role of the AMC is to float a mutual fund and manage the different investment schemes of the AMC. The AMC houses a chief investment officer (CIO), fund managers, analysts, and everyone responds to run and manage the mutual fund. The AMC is responsible for the operation and management of different mutual fund schemes, in compliance with the SEBI's rules and regulations.

Think of the AMC as the core engine responsible for running the mutual fund show.

Custodian – The AMC now appoints a custodian. A custodian’s job is to hold all the shares that the mutual fund buys. Think of the custodian as the safe keepers or the guardians of the mutual fund assets.

RTA – The ‘Registrar and Transfer Agents’ is appointed by the AMC. The RTA’s job is to ensure that they serve the clients of a mutual fund (unit holders). The services here include issuing folio numbers, transfer of unit, etc.

The custodian and the RTA are called the ‘service provider’, for the AMC company.

All the parties involved work in synch to run the mutual fund company. For you as an investor, the only two things that matter is –

Who is the sponsor of the AMC, this is to ensure you are dealing with credible names

Who the fund manager is – to ensure the money is handled by the right person

Anyway, let us put all of this information in context before we wrap this chapter.

Mutual Funds

Aditya Birla Sun Life Mutual Fund



**ADITYA BIRLA
CAPITAL**

1800-270-7000

Statement of Additional Information

SPONSORS

Aditya Birla Capital Limited (formerly known as Aditya Birla Financial Services Limited) (A subsidiary of Grasim Industries Limited)
Indian Rayon Compound, Vatval,
Gujarat- 362 266

Sun Life (India) AMC Investments Inc.
1 York Street, Toronto, Ontario,
Canada M5J 0B6

NAME OF INVESTMENT MANAGER

Aditya Birla Sun Life AMC Limited (formerly known as Birla Sun Life Asset Management Company Limited) (ABSLAMC)
One Indiabulls Centre, Tower-1, 17th floor, Jupiter Mill Compound, 841, S.B. Marg,
Elphinstone Road, Mumbai - 400 013 Tel.: +91 22 4356 8000 Fax: +91 22 4356 8111
E-mail: care.mutualfunds@adityabirlacapital.com Website: www.mutualfund.adityabirlacapital.com
CIN: U65091MH1904PLC0350811

NAME OF TRUSTEE COMPANY

Aditya Birla Sun Life Trustee Private Limited (formerly known as Birla Sun Life Trustee Company Private Limited) (ABSLTPCL)
One Indiabulls Centre, Tower-1, 17th floor, Jupiter Mill Compound, 841, S.B. Marg,
Elphinstone Road, Mumbai - 400 013 Tel.: +91 22 4356 8000 Fax: +91 22 4356 8111
E-mail: care.mutualfunds@adityabirlacapital.com
Website: www.mutualfund.adityabirlacapital.com
CIN: U74899MH1904PTC196755

As you can see, these details belong to the Aditya Birla AMC.

There are two sponsors here i.e. Aditya Birla Capital Limited and Sun Life (India) AMC Investments Inc. These two companies have jointly approached SEBI to procure an AMC license. Since there are two fund sponsors, this is a joint venture and the shareholding is as follows –

Name of Shareholders	Percentage ownership held by the shareholder
Aditya Birla Capital Ltd & others	51.00%
Sun Life (India) AMC Investment Inc.	49.00%
Total	100%

The sponsors, after obtaining the AMC license have floated Aditya Birla Sun Life AMC Limited, which is the name of the investment manager or AMC.

They have also formed a Trustee company called, the Aditya Birla Sun Life Trustee Private Limited.

The details of the service provider are as follows –

zerodha.com/varsity

E. SERVICE PROVIDERS

The Custodian

For all schemes, other than Aditya Birla Sun Life Gold ETF, **CitiBank, N.A.**, located at First International Financial Centre (FIFC), 11th Floor, Plot Nos. C 54 and C55, D Block, Bandra Kurla Complex, Bandra East, Mumbai 400051, India, has been appointed as the custodian of the securities that are bought and sold under the Schemes. The custodian is registered with SEBI under registration number IN2100004.

Deutsche Bank AG, India, having its Registered Office located at India Corporate Office, DB House, Hazratmal Somanji Marg, Fort, Mumbai, 400001, has been appointed as the custodian for all the investments made by Aditya Birla Sun Life Gold ETF, an Open ended Gold Exchange Traded Fund i.e. for Physical gold. The custodian is registered with SEBI under registration number IN2100005.

Legal Counsel

IC Legal
 Associates & Solicitors
 209, Hudson Solaris
 Plot N. S. Phadke Marg
 Off Western Express Highway
 Andheri (E), Mumbai - 400 059

The Registrar and Transfer Agents

ARSLAMC has appointed **Computer Age Management Services Pvt. Ltd. (CAMS)** located at Rayala Towers, 10B, Anna Salai, Chennai - 600052 to act as Registrar and Transfer Agents ("The Registrar") to the Schemes. The Registrar is registered with SEBI under registration number INR 000002813. The Board of Directors of ARSLAMC and the Trustees have satisfied themselves, after undertaking appropriate due diligence measures, that the Registrar has adequate capacity to discharge responsibilities with regard to processing of applications and dispatching unit certificates to subscribers within the time limit prescribed in the Regulations and also has sufficient capacity to handle investor complaints.

Statutory Auditors for the schemes of ARSLAMC

S. R. Batlibal & Co. LLP
 14th Floor, The Ruby
 29 Senapati Bapat Marg,
 Dadar (West)
 Mumbai - 400028

Fund Accountants for the schemes of ARSLAMC

Deutsche Investor Services Private Limited
 4th Floor, Block 1, Niran Knowledge Park,
 Western Express Highway, Goregaon (E),
 Mumbai - 400053

Collecting Bankers

Name	Registered Office Address	SEBI Registration No.
HDFC Bank	HDFC Bank House, Senapati Bapat Marg, Lower Panel, Mumbai - 400013	INR000000001
Citi Bank	Fort House, 4th floor, Unit HQ 1, On DfR Road, Fort, Mumbai - 400001	INR000000007
Standard Chartered Bank	23-25 M.G. Road, Fort, Mumbai - 400 001	INR000000008

As you can see, the company as appointed, two custodians (Citi and Deutsche) and 1 RTA (CAMS). Besides, there are other details on the bankers and auditors.

Key takeaways from this chapter –

- A fund manager is responsible for managing the mutual fund
- The sponsor of the AMC is like the promoter of a mutual fund
- The sponsor holds the AMC license
- The sponsors appoint a trustee and AMC company
- AMC is the investment manager responsible for running the mutual fund
- Custodian appointed by the AMC is responsible for holding shares and other assets of the AMC
- The RTA is responsible for servicing the AMC's unitholders

CHAPTER 7

Concept of fund & NAV

7.1 – The Family pot

I hope the previous chapter helped you understand the structure of a Mutual Fund company. Although not essential, I believe that the understanding of the Mutual fund structure will help you at some point in your investment journey.

Moving ahead, we direct our efforts to learn more about Mutual fund investing. We will learn about the different fund category, fund analysis, fund schemes, and many other things associated with mutual fund investment. Now, before we learn these concepts, we need to understand a fundamental concept. From my observation, I've noticed that many people get a bit lost when we use the term 'fund' in the context of a mutual fund.

So before we start digging deeper into the mutual fund concepts, we must get complete clarity on what the term 'fund' means.

I will take the liberty to simplify many things in this chapter; the simplifications in this chapter are only to help you get the context right.

So let us started, and as usual, let us build an imaginary story to help relate to the topic better.

Now, think of yourself as the stock market whiz-kid in your family. You have made a few successful stock investments, managed to score few

multi-bagger, called the market top and bottom couple of times, and have even managed to get a selfie with Rakesh Junjunwala at an event.

The story of your stock market success has sent a ripple in your family circuit, and you are even the centre of attention in the family WhatsApp group.

As expected, soon, your uncles, aunts, and cousins approach you to help them manage their money. The quasi fund manager status that you have achieved for yourself has gotten you all excited.

The question is – how will you manage this money?

Going strictly by regulations, unless you hold the license for fund management, like the PMS license we discussed in the previous chapter, you cannot manage other people's money.

Given this, assume that you apply for a fund management license and eventually procure one from SEBI.

Now, you are all set to render your fund management services to your family members and hopefully soon to many others outside the family.

Your family members are happy and are eager to reap the benefits of your fund management skills. The following family members approach you with their money. The details follow –

Family Member	Amount
Uncle	65,000
Aunt	100,000
Cousin 1	50,000
Cousin 2	35,000
Nephew	25,000
Sum	275,000

So you have five individual investors and each one of them has a different amount of money to invest. In total, across these five individuals, you have managed to pool in Rs.275,000/-.

Before you get started, you need to set a few expectations –

All investors are treated fairly in terms of return generated

You are permitted to treat these individuals differ in terms of service provided. For example, the aunt has invested the highest amount, so maybe when she visits, you can give her coffees and cookies, while the nephew has invested the least, so you can decide not to offer the coffee and cookies



The above two are critical points, let us spend a bit more time to rivet it.

Imagine you and I walk into a restaurant. You are a regular at the restaurant have been to the restaurant multiple times and have generated enough business for the restaurant. However, this is my first visit to the restaurant.

We both end up ordering a portion of biryani. The quality and quantity of the biryani we both get served will remain the same. However, since you are

regular, the owner himself may decide to serve you with fine silver cutlery, and the owner may even spend a few minutes chatting about your well-being. On the other hand, I'd be served with regular cutlery and treated like a regular customer.

However we both get to eat the same dish, no difference there.

So you as a fund manager can differentiate between customers on how much they have invested, but should certainly not differentiate and generate two different returns for two different customers based on how much they have invested. They all should experience the same returns.

In fact, in the mutual fund world, this gets further streamlined in terms of investment objectives, mandates, and other things. We will get to that in the next chapter.

Anyway, now that the expectations are in place, it now boils down to logistic arrangements on how this money gets managed.

To manage this money, you now ask your family members to transfer all the money into one single account. The idea is to pool all the money in the same account and use that to make investments in the market.

Since it's all pooled into one account, that account holding the funds belongs to all. Think of this as a rationale as to why 'Mutual funds' are called 'Mutual Funds'.

7.2 – The fund logistics

As a fund manager, it is your responsibility to ensure that those funds are invested in the stock market, and it grows at a healthy rate. The selection of

stocks is your prerogative, and you get to pick the stocks, choose for how long to hold them and decide when to sell them. While you do this, you need to ensure that every investor of yours is given the same treatment in terms of wealth creation.

Remember, you are pooling all individual monies and investing it as a whole aka a fund. So the return experienced by the investors should be uniform.

So given this, how do we ensure we have an equitable distribution of returns across all the clients?

To do this, we can start by issuing shares against the investment made by each investor. We can start by assigning a notional value to each of these shares.

This notional value or the initial value can be anything, and you can assign 5,10,50, or even 100 as the starting value. It does not matter. The most popular notional value is Rs.10, so we will stick to that.

We now issue Rs.10/- notional value shares to all our investors and estimate the number of shares each investor holds. For example, the uncle has invested Rs.65,000/-, so he gets –

$$= 65,000/10$$

$$= 6500 \text{ shares.}$$

The table now looks like this –

Family Member	Notional share value	Number of shares	Amount
Uncle	10	6,500	65,000
Aunt	10	10,000	100,000
Cousin 1	10	5,000	50,000
Cousin 2	10	3,500	35,000
Nephew	10	2,500	25,000
Sum		27,500	275,000

The total number of shares distributed across the five investors is 27,500, which, when multiplied by the notional value, i.e. 10, gives us the total corpus value, i.e. Rs.275,000/-.

Alright, now that the fund is formed and shares distributed across clients, the fund manager gets to work on things he is best at, i.e. to pick stocks and invest the money.

As a fund manager, you decide to invest the funds, i.e. Rs.275,000/- across ten stocks. For the sake of simplicity, you choose to invest the same amount across all the ten stocks. The distribution of funds in this manner is referred to as the 'equally distributed portfolio'.

The total corpus is Rs.275,000/-, so each stock gets an investment of Rs.27,500/-.

The division of funds across the ten different stocks look like this –

Stock Name	Day 1 Price	Number of shares	Investment Value
Stock 1	88	313	27,500
Stock 2	976	28	27,500
Stock 3	234	118	27,500
Stock 4	176	156	27,500
Stock 5	89	309	27,500
Stock 6	115	239	27,500
Stock 7	1080	25	27,500
Stock 8	91	302	27,500
Stock 9	347	79	27,500
Stock 10	567	49	27,500
Total			275,000

As you can see, the money invested across ten different stocks, each with different share price, but the same investment goes to every stock, i.e.

Rs.27,500/-

At this stage, two things are in place –

The shares are issued to all investors. The number of shares is proportional to the individual investment made

The funds are invested in the markets across ten different stocks

Now, once the funds are entirely invested in the market, the value of the overall fund depends on how the shares perform daily. A few stocks can go up, and a few can come down, resulting in either a profit or a loss. This profit and loss should be passed to the investors. The quantum of profit or loss experienced by the investors is directly dependent on the amount of money each investor has invested in the fund.

Let's continue the example to see how the P&L pass through happens. I've randomly assigned percentage movement to all these stocks.

Stock Name	Day 1 Price	Number of shares	Day 1 value	% Change	Day 2 price	Day 2 value
Stock 1	88	313	27,500	3.00%	90.84	28,325
Stock 2	976	28	27,500	-0.85%	967.704	27,266
Stock 3	234	118	27,500	1.01%	236.3634	27,778
Stock 4	176	156	27,500	-2.79%	171.0896	26,733
Stock 5	89	309	27,500	8.50%	96.565	29,838
Stock 6	115	239	27,500	0.13%	115.1495	27,506
Stock 7	1080	25	27,500	0.88%	1089.504	27,742
Stock 8	91	302	27,500	-0.28%	90.7452	27,423
Stock 9	347	79	27,500	-2.14%	339.5742	26,912
Stock 10	567	49	27,500	2.88%	583.3296	28,292
Total			275,000			277,844

As you can see, the stock prices have changed on day 2, thereby the invested value across each share also varies accordingly. As a result of this change, the

total value of the portfolio is Rs.277,844. The fund has generated a one day return of Rs.2,844/- or 1.0340%.

The profit of Rs.2,844/- has to be distributed across all the five investors in proportion to their investments. To ensure a fair distribution, all we need to do is, ensure the notional value goes up (or down) by the same percentage as the fund, which is 1.0340% in this case.

Initial notional value (day 1) – 10

P&L % in funds – 1.0340%

New notional value (day 2) – $10 \times (1 + 1.0340\%) = 10.1034$

So, the new notional value is 10.1034, multiplying this with the number of shares should result in the new investment value for the investor.

Family Member	Number of shares	New notional value	Investment value
Uncle	6,500	10.1034	65,672.10
Aunt	10,000	10.1034	101,034.00
Cousin 1	5,000	10.1034	50,517.00
Cousin 2	3,500	10.1034	35,361.90
Nephew	2,500	10.1034	25,258.50
Total fund value			277,844

As you can see, the investment for each of the investors has gone up by the same percentage point, but the absolute money made by them differs, based on the initial investment amount.

Also, if you add up all the new investment amount, you will get the new fund value, i.e. Rs.277,844/-.

Before we wind up this chapter, I want you to remember these points in the context of a mutual fund –

An investment fund is formed when different people pool in their money

The investment objective remains the same across all the investors

Notional value is assigned at the start of the fund formation, which then fluctuates based on the daily investment value. In the Mutual fund world, this is called the '**Net Asset Value**'.

A mutual fund's net asset value or NAV is one of the most important metrics.

On an end of day basis, the mutual fund company does the following calculations –

The value of all the investments

Expenses of running the mutual fund

Based on these two parameters, the NAV of a fund is estimated daily. The formula to calculate the NAV is –

$$\text{NAV} = (\text{Value of all the assets} - \text{the expenses}) / \text{number of shares (units)}$$

I'll end this chapter here. I'll be happy if you have fully understood the concept of what a fund is and the role NAV plays.

We are still in the early stage of the learning curve, and we will revisit these topics. However, before I wind up this chapter, I have a question for you related to the example we used in this chapter.

On day 3, suppose your father in law approaches you and wants to invest Rs.75,000/-, at what rate will you issue the shares to him?

Would it be Rs.10 (initial value) or Rs.10.1034/-?

Key takeaways from this chapter

- In a mutual fund, different people invest in a collective investment vehicle with a common investment objective
- Every investor in a mutual fund is treated equally in terms of percentage return
- At the start of the fund activity, every investor is issued shares/units at a notional value
- The value of the shares/units change based on how invested assets perform daily

CHAPTER 8

The mutual fund fact-sheet

8.1 – The Mutual Fund world

In the previous chapter, we set up a hypothetical situation that helped us understand the concept of a fund and how it gets managed. We discussed the idea of ‘pooling of funds’ to invest in the market with a common purpose. I agree we oversimplified the previous chapter, but that’s ok as the objective at this point is to understand the fund structure and the way it serves its investors.

I also hope you are clear about the concept of ‘Net asset value or the NAV’. The mutual fund NAV or the mutual fund unit is an elementary concept, and I hope you have no confusion about this. If yes, I would urge you to read the previous chapter once again.

We will, in this chapter, take that conversation forward and look at one of the most crucial documents from a fund house, i.e. the Fund fact sheet. The factsheet is a document that puts up all the information related to a fund/scheme. By and large, everything that you need to know before investing in a particular fund is available in the fund fact sheet. In this chapter, we will look at fund factsheet and figure out how to read and understand the same.



Before we get to the fund's fact sheet, I think it is essential to get a grip on how wide and deep the Indian Mutual fund industry is. The discussion will help you understand the length and breadth of the mutual fund industry –

So here are necessary details for you (as on Dec 2019) –

The number of fund houses – 43. These are the number of mutual fund companies who have obtained the AMC license from SEBI. Example: Kotak AMC, HDFC AMC, ICICI Pru AMC, Axis AMC, DSP etc.

The number of scheme – 2035. Each fund house (AMC), can run multiple schemes for people to invest. For example, ICICI Pru AMC runs 243 different schemes, probably the highest in the industry. Franklin AMC runs about 67, Aditya Birla AMC manages around 163 schemes. A scheme is a fund with a specific investment objective, more about this when we dig into the factsheet.

Money managed by AMCs – 26L Crore. This is the aggregate amount of money managed by the entire mutual fund industry (across all AMCs). For

example, HDFC AMC, which is one of the largest AMC, manages about 3.7L Crs. Axis AMC, on the other hand, manages about 1.05L Crs. Yes AMC manages about 916 Crs. This money is coming in from retail individuals and corporates. Out of this 25.68L Crs, roughly 14.5L Cr is from retail investors like you and me, and about 12L Crs is from the corporates

The number of unique Investors – 2 Crs Indians. This is the number of individual investors investing in Mutual funds schemes across all the AMCs.

Again, these are good to know numbers to put things in some perspective. You need not have to know these numbers if your objective is to invest in the markets via mutual funds.

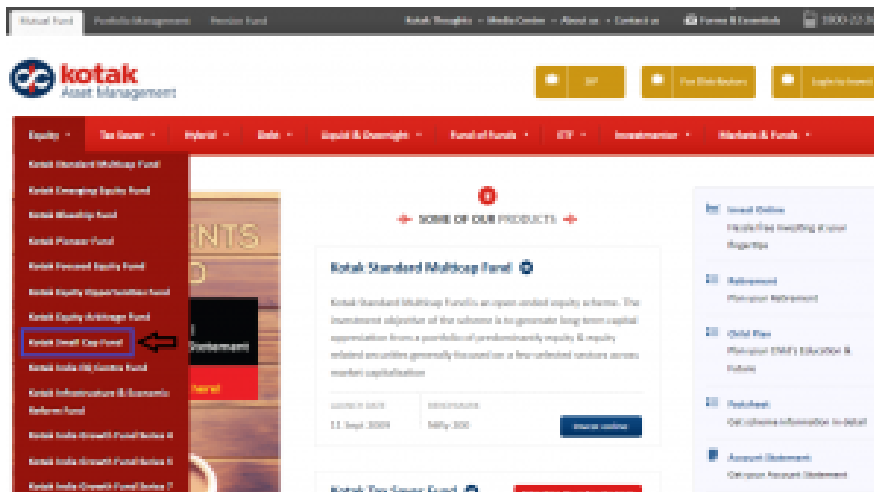
8.2 – The fund factsheet

An asset management company (AMC), manages and runs a mutual fund scheme. An AMC can run many schemes as long as they have SEBI's approval for it. A mutual fund scheme is essentially a fund with a specific investment objective. An investment objective is the stated goal of the fund. For example, the investment objective of a mutual fund scheme could be an investment in the top 100 large-cap companies in the country or it could be an investment in the top 100 small-cap companies, so on and so forth. The investment objective is stated at the inception of the fund, and the fund manager is expected to stick to this mandate until the life of the fund.

So let us pick a fund fact sheet and dig into what information is available to us. Let us start with Kotak AMC.

By the way, I've randomly selected Kotak AMC, please don't consider this as a recommendation of any sort 😊

I can go to AMC's website to find the fund's factsheet. Here is the snapshot of the same –



As you can see, there are many different tabs right at the top – Equity, Tax Saver, Hybrid, Debt, Liquid etc. These are all different categories of funds. Over the next few chapters, we will understand what each of these categories means and what to expect from investments made in these categories. For now, let us stick to 'Equity' as a category. As you can see, there are many different funds/schemes under Equity as a category. Let us pick 'Kotak Small Cap Fund' and see what goes in the fact sheet. Click on the link, and you will find the fund's factsheet. In Kotak's case, they call this the 'One Pager'. Fair enough.

SEBI has mandated that the name of the fund should be indicative of what the fund is like to do. So moment I read, 'Kotak Small Cap Fund', I know that this is a fund which focuses on small-cap investments.

I've downloaded the fund's one-pager, and here is the very first page –

About Kotak Small Cap Fund

Kotak Small Cap generates capital appreciation from a diversified portfolio of equity & equity-related securities by investing predominantly in the small market capitalisation companies across sectors. The scheme is well positioned to provide the benefits of potential growth offered by small cap stocks, which have the potential to become tomorrow's large cap.

Strategy of Small Cap Fund?

What We Research In A Small Cap Investment



Salient features of Small Cap Fund



Small Cap companies are driven by domestic dynamics, while largecaps are influenced by global factors.

The introductory paragraph gives us information on the stated objective of the fund. As you can see, the stated objective says ‘Kotak Small Cap generates capital appreciation from a diversified portfolio of equity & equity-related securities by investing predominantly in the small market capitalisation companies across sectors’

From this, we can infer –

1. The fund manager intends to have a diversified portfolio; therefore it is not focused on a specific sector
2. Investments are in Equity and equity-related securities. This is mainly stocks

3. Investments are predominantly in the small market capitalisation companies, which means as the fund name suggests, they look at investments in the small-cap company
4. The second section talks a bit about how they intend to research these small-cap stocks. Frankly, this should not be of concern to you. I mean think about it – if you knew what to look for when investing in a stock or if you had an opinion on what makes a good stock, then you are better off investing in the stocks directly right? Why mutual funds at all?

But since the information is any way out there, here is a sneak peek into their research methodology –

Look at the integrity of the promoters – necessarily ensure they are not scammy

Ability to generate cashflow – meaning they look for companies that are operationally profitable and capable of producing a surplus over all the expenses

Experience of market cycles – ensure that the company has survived through the test of times and has proved its resilience

Simple business model – No complicated verticals and easy to understand companies

Quality metrics – This means that all the financial ratios tick right

Business quality – Good quality business I guess J

Low leverage – Companies with very little or zero debt

Now, I can decipher this because I belong to the same industry. However, most of the investors cannot read through these terms, and frankly, as I mentioned earlier, you don't have to worry about this.

8.3 – Other fund facts

The fund fact sheet presents a lot more interesting data points. We will also use this opportunity to understand some of the key jargons used in the mutual fund world. Here is the snapshot for the fund's other facts –

FUND FACTS

Investment Objective:
The investment objective of the scheme is to generate capital appreciation from a diversified portfolio of equity and equity-related securities by investing predominantly in small cap companies. There is no assurance that the investment objective of the Scheme will be achieved.

Type of Scheme:
An Open-Ended Equity Growth Scheme

Benchmark: Nifty Smallcap 50 TRI

Fund Manager: Mr. Pankaj Tibrewal

Allotment Date: February 24, 2005

Plans & Options:
Plan: (a) Regular Plan (b) Direct Plan
Option: Dividend Payout, Dividend Reinvestment & Growth (applicable for all plans)

SIP (Systematic Investment Plan):
₹1000 (Subject to a minimum of 6 SIP installments of ₹1000 each)

Minimum Initial Investment:
Initial Purchase (Non-SIP): ₹5000 and in multiples of ₹1 for purchases and of ₹0.01 for switches
Additional Purchase (Non-SIP): ₹1000 and in multiples of ₹1 for purchases and of ₹0.01 for switches
SIP Purchase: ₹1000 (Subject to a minimum of 6 SIP instalments of ₹1000 each)

Load Structure:
Entry Load: Nil
Exit Load:
1) For redemptions / switch outs (Including SIP/STP) within 1 year from the date of allotment of units, irrespective of the amount of investment – 1%
2) For redemptions / switch outs (including SIP/STP) after 1 year from the date of allotment of units, irrespective of the amount of investment – NIL
3) Units issued on reinvestment of dividends shall not be subject to entry and exit load.

The initial section is the investment objective, which we reviewed earlier, so we will skip this section. The next thing you can notice is the benchmark of the fund. A mutual fund scheme should essentially benchmark itself to an index. This is required to evaluate the performance of the fund over a period. A mutual fund should have the appropriate benchmark. For example, a small-cap fund is benchmarked against a small-cap index, as in this case. It is almost mis-spelling if the benchmark is not appropriate, for example, a small-cap fund being benchmarked against a large-cap index. To put this context, the performance of a family car such as Wagon R should

benchmarked against another family car such as maybe a Swift, and it would be futile to benchmark it against a Ferrari.

The next section details the type of scheme; there are a couple of exciting things to note here. The type is– Open-ended, equity, growth scheme. There are three critical parameters here; let us understand what it means.

Open-ended – When an AMC starts a fund, they have the option to let that fund run for either a fixed period or keep it going forever. For example, I can start a fund today and let it run for three years from today, at the end of 3rd year, the fund will cease to exist, and the investor is obligated to collect his money back (along with the profit or losses). Funds with such defined time are called a '**closes ended fund**'. If a fund does not have an expiry date, then it's called an open-ended fund. For all practical purposes, its always good to deal with an open-ended fund

Equity – This is a reference to the asset class the mutual fund invests. Equity, as you know, refers to the shares listed in the market. Another asset class is debt, which could be either corporate debt or PSU debt. More on this when we deep dive into debt funds

Growth – Let us skip this for now. We will discuss this in a bit.

Apart from this, this section also details a few other things –

Fund Manager – I find this interesting to know who is managing the fund. I do a quick google search to know his background and his past performance. After all, he will be responsible for managing our hard-earned money, so it makes sense to see a bit about his background

Allotment date – This is the date from which the fund commenced its operations. The allotment date gives you a sense of how old the fund is. It is not that it matters, but the older the fund, slightly easier it gets to analyse viz a new fund.

The next section deals with ‘Plans & Options’. Under plans, there are two variants –

Regular plan – This is interesting. Think about a farmer growing onions. He nurtures the onion saplings, waters it, weeds it, and eventually harvests it and gets the onion ready for consumption. Let us say the cost of the onion is about Rs.30/- per Kg at this point. An intermediary now acts as an ‘agent’ and delivers the onion to people like you and me, and we, in turn, pay him Rs.40/- per Kg. The delta (Rs.10), is what the agent earns. Now replace the farmer with the AMC, the onions with a fund/scheme, and the agent as a mutual fund distributor. The mutual fund distributor is like the middleman between the AMC and the investor. If a mutual fund distributor approaches you and sells you a mutual fund, then he is selling you a ‘regular plan’, which means he is entitled to receive a commission from the AMC for selling this fund to you. There is nothing wrong with this, except that the money is going from your pocket.

Direct plan – Now you don’t need to buy the fund via a distributor. If you know which fund to buy, capable of doing your mutual fund research (which by the way is the end objective of this module), then you can buy that fund directly from the AMC. When you buy directly from the AMC, then there is no distributor involved; hence the distributor commissions are not paid, which

means you save on commissions, which naturally means a better return on your investment.

Just to let you know, when you buy mutual funds via Zerodha, you are buying a direct plan; hence you will enjoy a better return. We will deep dive into this topic later in this module, but for now, remember when you invest in mutual funds, opt for a direct plan as you will save on commissions and therefore enjoy the better return.

The other bit in this section is about the option. As you can see, this fund has two options –

Dividend payout – Think about it, when you buy a stock of a company and the company issues a dividend, then as an investor, you are entitled to receive these dividends right? Likewise, when the fund manager buys the stock of a company, and the company issues a dividend, then the AMC receives this dividend. Since the funds with the AMC belongs to the investors, this dividend belongs to the investors. The dividend you are entitled to obtain from the AMC is to the extent you've invested in the fund. The AMC gives you two options – you can withdraw this dividend, or you can choose to reinvest the dividend amount and buy more units of the fund. The dividend payout option helps you withdraw the dividend as and when the dividend gets paid.

There are technicalities here as to how the AMCs issue dividends. We will discuss this at a later point.

Dividend reinvestment plan – This plan receives the dividend on your behalf and reinvests the dividend into the same fund. So necessarily, you don't get the dividend in the form of cash, but instead more units or NAV of the same fund.

Growth plan – In the growth plan, the investor does not receive any dividends. The profits earned are ploughed back to fund and therefore the ‘compounding effect’, works well here. I personally prefer this plan over the other two.

Next up is the SIP details. SIP stands for ‘systematic investment plan’. In a typical SIP, you will invest the same amount of money every month for as many years as possible. Example of a SIP is investing say Rs.5000/- in Kotak Small-cap fund on 5th of every month for as many months as possible. Think of SIP as investing in instalments. SIP is perhaps one of the most significant financial inventions and has many merits to it. Given the importance of this topic, I think a separate chapter on this topic is justified, and we will do that at a later point. For now, think of SIP in its basic form, i.e. to invest a fixed amount of money every month in the same fund for many years.

As you can see, you can SIP on Kotak Small-cap fund, but for that, the AMC has specified that the minimum SIP amount every month is Rs.1000/- and the minimum number of months is six.

The next section talks about the initial minimum investment in the fund. This is self-explanatory, if you choose not to SIP, then the minimum amount to invest is Rs.500/- and Rs.1000/- for the monthly SIP.

The last section of the fact sheet talks about the load structure of the fund. There is a mention of few terms here like the SIP, STP, switches etc. We will club all these in the SIP chapter. For now, let’s talk about the ‘load structure’.

The load structure is essentially the amount of money, in percentage terms; you will have to pay in case you wish to withdraw from the fund. As you can see, there are two types of load structure –

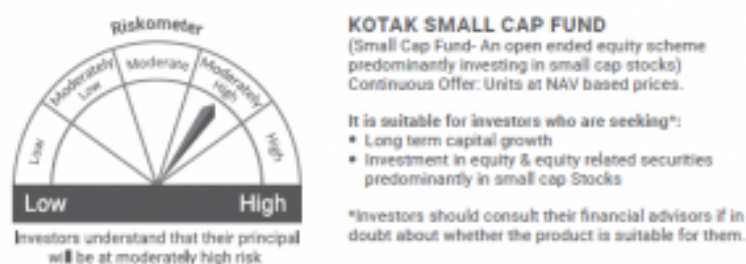
Entry load – This is no longer applicable. However, years ago, you’d have to pay a percentage for investing your money in a mutual fund. I guess AMC’s have to mention ‘entry load’ as nil for legacy reasons.

Exit load – This is the amount of money you will have to pay at the time of withdrawal. As you can see, there is a 1% load if you wish to withdraw before the completion of 1 year and no-load post that.

8.4 – Riskometer

Every AMC is supposed to self-assess the riskiness of the fund and lets the customers know about this. The self-assessment is something that SEBI mandates to avoid cases of the misspelling of the financial product. For example, a small-cap fund should not be packaged as a low-risk fund and sold to the investors.

Here is how the AMC does a self-assessment of risk –



The needle of the riskometer points to ‘moderately high’, meaning that the Kotak Smallcap fund is risky. The text next to the riskometer reiterates this. Now, agreed this is a risky fund, but that should not stop you from investing in risky funds.

Remember, the antidote for ‘risk’ in the mutual fund world is ‘time’; hence the longer you stay invested in a mutual fund, the safer it gets.

More on this in the next few chapters, so stay tuned.

Key takeaways from this chapter

- The factsheet of a mutual fund details all the essential parameters worth knowing about the mutual fund
- The investment objective of a fund is essentially the guiding principle for the investment the fund manager makes
- Open-ended funds don't have an 'expiry' for the fund. It can go on forever
- Close-ended funds are time-bound
- Regular plans pay out distributor commissions, hence lower yield to investors
- The direct plan does not pay distributor commissions; hence the returns are higher for the investor
- The MF investor can choose to receive or reinvest the dividends
- Riskometer is a self-assessment of risk by the AMC

CHAPTER 9

The Equity scheme (Part 1)

9.1 – October 2017

The previous chapter hopefully has given you some insights into reading a mutual fund factsheet. The factsheet lists some of the good to know information about a mutual fund. Do remember, the factsheet also doubles up as a marketing document for the Asset Management Company (AMC), hence read through the fund's factsheet with a pinch of salt.

Starting from this chapter, we will shift our focus on the mutual fund categories. The idea is to discuss the main categories and a few subcategories of mutual funds.

Please note, the term 'subcategory' in the context of mutual fund categories does not exist, but I think it makes life simpler if you thought about the mutual fund categories this way.

I'm not sure if we can cover all the subcategories in this module. For example, Debt fund as a main mutual fund category has nearly 16 different subcategories, equity as a category has about 10/11 subcategories. Given this, as you can imagine, discussing the entire gamut of MF categories will digress us from the central theme of this module which is personal finance. The idea here is to lay down a foundation for you to understand the main mutual fund category (and a few subcategories) and hopefully, this

foundation will help you understand the many subcategories of mutual fund schemes.

No discussion on the mutual fund universe is complete without touching upon the SEBI's October 2017 circular on MF categorisation. This circular from SEBI was fairly significant, and it helped simplify the MF universe. To appreciate why this SEBI circular is essential, we need to dig up a bit of history.

Back in the days, the mutual fund world was a bit chaotic. The asset management companies would float many different schemes with overlapping investment ideologies. These funds would often confuse or mislead investors. For example, an AMC would run a 'large-cap fund', which by definition should predominantly have only large-cap stock, but these AMCs would stuff in small-cap stocks, which as you can imagine bumps up the volatility (and the return) of the fund. A typical large-cap investor would sign up for the market returns plus lower volatility, but the presence of small-cap stocks in a large-cap fund kind of defeats the purpose.

Here are a bunch of other problems that existed pre-Oct 2017; these problems existed mainly due to the lack of proper mutual fund classifications and definitions.

Multiple funds – An AMC would launch numerous funds with similar investment objectives. For instance, it was common for an AMC to have multiple large-cap or mid-cap schemes, while all these funds had the same investment objective. The distinction between the funds was not too clear.

Lack of definition – While an AMC would title their scheme as a large or mid-cap fund, it would contain stocks from other market capitalisation. The

problem occurred because there was no formal definition of market capitalisation.

Portfolio composition – The mutual fund schemes lacked a clear definition in terms of portfolio composition. For instance, the portfolio of a mid-cap fund is expected to hold mid-cap stocks, but it was common to find funds with a large proportion of small-cap stocks while the name of the fund suggested the fund was a mid-cap focused fund.

These problems led to a series of other issues. One of the major concerns was with benchmarking of funds. A large-cap fund is benchmarked against a Nifty 50 index; now we have a problem if a fund with small-cap stocks gets disguised as a large-cap fund and gets benchmarked against a large-cap index. The performance of such a ‘large-cap fund’ (at least in bull markets) is bound to get skewed and offers an abnormal positive return, often misleading the investor.

SEBI addressed these problems with the Oct 2017 circular. You can find the original circular [here](#).

The circular clearly defined the market capitalisation of stock, which naturally solved a few legacy issues in the mutual fund world. As per the definition –

Large-cap stocks – 1st to 100th company in terms of full market capitalisation

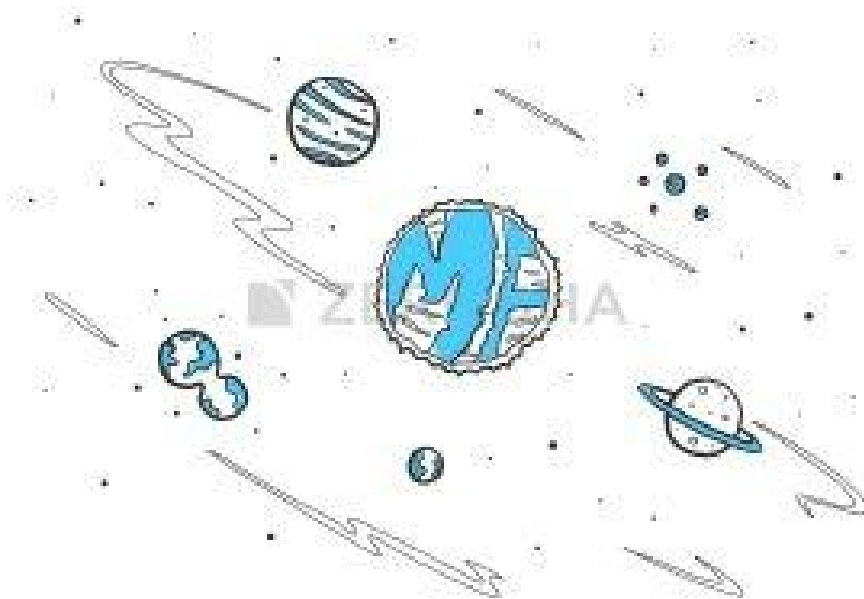
Mid-cap stocks - 101st to 250th company in terms of full market capitalisation

Small-cap stocks – 250th company onwards in terms of full market capitalisation

With this formal definition, there was no longer ambiguity on the market capitalization, and the AMCs were now forced to comply with the definitions.

Further, SEBI mandated that an AMC can have only one scheme in any category (except for the thematic, index fund, and fund of funds). This mandate put a stop to AMCs offering a bouquet of schemes with an overlapping investment thesis. To make things clear, SEBI defined the portfolio composition as well. To put this context, post the circular, if an AMC were to run a large-cap fund, then SEBI not only defined what large-cap is but also set the minimum number of large-cap stocks (in % terms) the fund should hold in its portfolio.

Anyway, let us jump to the different mutual fund categories and subcategories and start exploring them. The idea here is to understand these categories and invest in them based on our financial situation in life.



9.2 – The Mutual fund universe

Primarily, there are five different categories of mutual funds under which there are many different categories. Think of them as a ‘category – subcategory’ way of classification. Here are the main categories –

1. Equity
2. Debt
3. Hybrid
4. Solution-oriented
5. Other schemes

The entire 'category – subcategory' structure is as follows –

Equity	Debt	Hybrid	Solution Oriented	Others
Large-Cap	Money Mkt	Conservative Hybrid	Children's Fund	Index Fund/ETF
Mid-cap	Short Duration	Balanced Hybrid/Aggressive Hybrid	Retirement Fund	Fund of Fund
Small-cap	Overnight	Dynamic asset allocation/Balanced Fund		
Large & Mid cap	Liquid	Multi asset		
Multi-cap	Long duration	Arbitrage		
Focused	Medium Duration	Equity Savings		
Dividend Yield	Short term			
Value or Contra	Ultra short term			
Sector	Medium to Long duration			
ELSS	Dynamic bond			
	Corporate risk			
	Credit risk			
	Banking & PSU			
	GILT			
	Gilt/10 year duration			
	Hyater			

To begin with, we will focus on Equity as a category. As per SEBI's circular, an AMC is supposed to run only one scheme per category. For example, an AMC can have only one large-cap, one mid-cap, one small-cap so and so forth.

However, under Equity, an AMC can have multiple sectoral funds.

9.3 – Equity Category

The equity category is perhaps the most popular MF category in terms of retail participation. As the name suggests, the schemes under the equity category invest in listed company shares. As you are aware, there are many different styles of investment in the market. A few of these popular styles have been picked and formally inducted into the 'Equity category'. As you can see from the image above, here are nearly 11 different subcategories within

the Equity category. Each of these categories is a different style of investing in the market, and they all differ in their risk and reward characteristics.

However, the general philosophy of investing in an equity scheme remains the same, i.e. to generate wealth. What differs across these categories is essentially the timeline of this wealth generation and like I mentioned, the risk and reward.

Over the years, thanks to my profession, I've had the opportunity to interact with many people about mutual fund investing. One thing that I can tell you with confidence is that most of them approach mutual fund investing (at least in the equity funds) with unrealistic expectations. Some even go to the extent of looking at mutual funds as a proxy for direct stock investing. They almost have a trading attitude with their funds. Such an approach to mutual fund investing can have dangerous consequences for your capital.

Unless you have the right expectation and attitude towards equity investing, it is nearly impossible to generate wealth from mutual fund investing. So what is the right expectation/attitude when investing in an equity-oriented mutual fund.

Well, the true answer to this question depends on the exact subcategory of the mutual fund you are looking at. However, here are a few generic pitfalls to avoid –

Not a short term solution – Equity oriented mutual funds are not a solution for your short term financial goals. By short term, I mean 2-3 years kind of time frame. Invest in equity-oriented funds only if you have the necessary time it deserves. To put this in context, I started investing in an equity mutual fund in 2006, it is the 14th year as of 2020, and I continue to invest in it. I'm not

suggesting that you need to stay invested for this long a period, all I'm trying to say is that you need to have a super long term approach to mutual funds. I'd say at least ten plus years (my personal opinion). Anything lower than this can be a futile attempt at wealth creation.

Why not short term? – One of the common follow up questions is why not consider equity mutual fund for short term investments. Well, there have been instances where short term mutual fund returns have swelled. It requires a great amount of market study to figure and time this. Now, if you as a common man investing in the market can time the market, then why invest in mutual funds at all? You may as well invest in stocks directly, right?

Understand time – You may have heard of the saying, 'time heals everything'. Well, this is true for market volatility as well. The market is volatile; this is the very nature of this beast. However, the only way for a common man to deal with volatility is to give your investment sufficient time. Hence, a short term approach to MF investing does not work.

Don't keep switching – I've seen investors switch between mutual funds as they would switch between their browsing tabs. Switching is essentially redeeming the units from 'Fund A' to invest in 'Fund B', for no real reasons. In my opinion, this cannot be packaged as long term investing. The true definition of long term investing is staying invested in a fund across a multi-year period (and across multiple market cycles). Of course, occasionally there will be justifiable reasons for you to switch between funds, we will identify these reasons at a later point.

Headline investing – Most investors get carried away by newspaper headlines. A headline which remotely hints at 'bearishness', is taken way too seriously and used as a reason to exit an ongoing mutual fund investments.

I'm guilty of doing this mistake myself. Back in 2007, I pulled out of a fund that was doing very well because I read a headline saying markets are likely to go down shortly. The problem here is not just with the withdrawal; it is actually with the fact that you are breaking an ongoing investment journey. I was never able to restart this investment.

Trust me; you will do far better than most of the investing public if you understand these basic points which make a big difference to your investing journey. Here is how my investments in Mutual funds have done till date –

	Category	Starting year	Abs Ret	XIRR
Fund 1	Large cap	2013	42.14%	10.65%
Fund 2	Large cap	2013	47.42%	11.84%
Fund 3	Large cap	2014	21.19%	11.89%
Fund 4	Mid cap	2006	186.36%	14.47%
Fund 5	ELSS	2006	77.20%	10.48%
Fund 6	EQ Value	2013	35.90%	9.40%

These are all regular funds. Unfortunately, the direct fund option was not available back in the days. The returns would have been better, had I decided to invest in the same fund, direct option. I'm in the process to transition all my regular to direct funds. Hopefully, this table should look better over the next decade 😊

Also, I think three large-cap funds in my portfolio is an overkill, and perhaps I should look at replacing at least two of these funds with a low-cost index fund. At a later stage, I'll share my thoughts on this topic related to asset allocation and fund diversification.

We will now proceed to understand a few of these subcategories of equity mutual funds.

9.4 – The Equity mutual fund subcategories

details. So go to the AMC's website and lookup for any fund you are interested in, and you'll find the portfolio details in the 'statutory disclosure' section.

Usually, when an investor decides to invest in a large-cap fund, he has a twin agenda – (1) capital appreciation in line with the markets, (2) low volatility. By low volatility here, I mean with respect to small and mid-cap funds.

In simple words, this means that the investor is looking at wealth creation but with not so much risk to his capital. Do remember, these are large-cap stocks, meant to be stable hence less volatile. Of course, by virtue of investing in the stock market either directly or via a mutual fund, the capital is exposed to volatility. Like I mentioned earlier, the only antidote to volatility is time. So it goes without saying that you need to stay invested for a long period to factor in the volatility and generate decent returns.

Here is a look at how the top large-cap mutual funds have performed over the last ten years. I've defined 'top', by considering the size of the fund's AUM. I've taken this data from Moneycontrol –

Scheme Name	Entered	AUM (₹ Cr)	Annualized Return	Annualized Return	View of 1000 Investments
BOI Prudential Bluechip Fund - Growth (Large Cap Fund)	3	20000.01	200.00%	11.00%	1000.00
BOI Prudential Bluechip Fund - Institutional Option I - Growth (Large Cap Fund)	---	20000.01	240.00%	11.00%	1000.00
UTI Blue Chip Fund - Growth (Large Cap Fund)	3	18000.00	190.00%	11.00%	1000.00
Aditya Birla Sun Life Franklin Equity Fund - Regular Plan - Growth (Large Cap Fund)	1	17000.00	195.00%	11.00%	1000.00
BOI Prudential Bluechip Fund - Growth (Large Cap Fund)	3	16000.00	180.00%	10.00%	1000.00
Axis Asset Manager Large Cap Fund - Regular - Growth (Large Cap Fund)	4	14000.00	170.00%	10.00%	1000.00
Reliance Large Cap Fund - Growth (Large Cap Fund)	2	13000.00	160.00%	11.00%	1000.00
Franklin India Bluechip Fund - Growth (Large Cap Fund)	1	12000.00	150.00%	9.00%	1000.00
UTI Mastershare Ltd Balance - Growth (Large Cap Fund)	3	11000.00	140.00%	10.00%	1000.00
JM Large Cap Fund - Growth (Large Cap Fund)	3	10000.00	130.00%	8.00%	1000.00
BOI Prudential Bluechip Fund - Regular Plan - Growth (Large Cap Fund)	3	9000.00	120.00%	9.00%	1000.00
BOI Prudential Bluechip Fund - Growth (Large Cap Fund)	3	8000.00	110.00%	10.00%	1000.00
BOI Prudential Large Cap Fund - Growth (Large Cap Fund)	5	7000.00	100.00%	11.00%	1000.00
Axis Large Cap Fund - Regular Plan - Growth (Large Cap Fund)	3	6000.00	90.00%	10.00%	1000.00
BOI Prudential Large Cap Fund - Growth (Large Cap Fund)	4	5000.00	80.00%	9.00%	1000.00
UTI Large Cap Fund - Growth (Large Cap Fund)	3	4000.00	70.00%	10.00%	1000.00

The key point to note here is the positive return across all the funds against a long investment horizon.

Mid-cap/small cap/large & midcap funds – I guess the names are quite clear for us to know what to expect from the fund.

The mid-cap fund predominantly consists of mid-cap stocks and the small-cap funds contain small-cap companies. The volatility in mid and small-cap stocks is quite high. Like the large-cap stocks, investment in these funds should be long term. You cannot afford to invest on a short term basis in these funds. For example, here is how the small and mid-cap funds have performed over the last two years –

Search	Start Date	End Date	Filter	Download Data																																																							
<table border="1"> <thead> <tr> <th>Return Rank</th> <th>Start Date</th> <th>End Date</th> <th>Assets Under Mgmt</th> <th>Annual Return</th> <th>Annualized Return</th> <th>Rate of Withdrawal</th> </tr> </thead> <tbody> <tr> <td>Axis Small Cap Fund - Growth (Investment)</td> <td>1</td> <td>1940.18</td> <td>8.84%</td> <td>-4.11%</td> <td>1000.00</td> </tr> <tr> <td>Axis Midcap Fund - Growth (Investment)</td> <td>2</td> <td>1488.72</td> <td>13.21%</td> <td>7.48%</td> <td>10.20.13</td> </tr> <tr> <td>Fundrise Mid-Cap Growth Fund - Regular Plan - Growth (Investment)</td> <td>3</td> <td>1328.88</td> <td>-8.80%</td> <td>-8.80%</td> <td>800.71</td> </tr> <tr> <td>Kotak Emerging Equity - Growth (Investment)</td> <td>4</td> <td>888.88</td> <td>-3.20%</td> <td>-1.40%</td> <td>887.23</td> </tr> <tr> <td>ICICI Midcap Fund - Regular Plan - Growth (Investment)</td> <td>5</td> <td>688.77</td> <td>-1.20%</td> <td>-0.70%</td> <td>888.13</td> </tr> <tr> <td>Franklin India Mid-Cap Fund - Growth (Investment)</td> <td>6</td> <td>478.82</td> <td>-1.80%</td> <td>-0.77%</td> <td>888.71</td> </tr> <tr> <td>Franklin India Small Cap Fund - Growth (Investment)</td> <td>7</td> <td>388.88</td> <td>-8.40%</td> <td>-8.70%</td> <td>888.87</td> </tr> <tr> <td>Axis Small Cap Fund - Growth (Investment)</td> <td>8</td> <td>388.88</td> <td>-10.40%</td> <td>-8.70%</td> <td>888.88</td> </tr> </tbody> </table>	Return Rank	Start Date	End Date	Assets Under Mgmt	Annual Return	Annualized Return	Rate of Withdrawal	Axis Small Cap Fund - Growth (Investment)	1	1940.18	8.84%	-4.11%	1000.00	Axis Midcap Fund - Growth (Investment)	2	1488.72	13.21%	7.48%	10.20.13	Fundrise Mid-Cap Growth Fund - Regular Plan - Growth (Investment)	3	1328.88	-8.80%	-8.80%	800.71	Kotak Emerging Equity - Growth (Investment)	4	888.88	-3.20%	-1.40%	887.23	ICICI Midcap Fund - Regular Plan - Growth (Investment)	5	688.77	-1.20%	-0.70%	888.13	Franklin India Mid-Cap Fund - Growth (Investment)	6	478.82	-1.80%	-0.77%	888.71	Franklin India Small Cap Fund - Growth (Investment)	7	388.88	-8.40%	-8.70%	888.87	Axis Small Cap Fund - Growth (Investment)	8	388.88	-10.40%	-8.70%	888.88				
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The last two years have been particularly bad for the small and mid-cap stocks, and this is evident across the fund's returns. I'm not trying to say that the returns across all two years or three years (or any short term cycle) will always be bad. It depends on the market; however, for a common man, it is nearly impossible to time the market and call the cycles. Hence when we invest, we should have a long term agenda, or at least have the intent to stay invested for the long term.

Here is how some of these small and mid-caps have performed over the last ten years –

Search	Investment	10Y Return	100 Investment
Top Mid Cap Growth Fund - Regular Plan - Growth and Capital	₹ 100,000	100.00%	₹ 100,000
Mid-Cap Emerging Equity - Growth and Capital	₹ 100,000	100.00%	₹ 100,000
DSP Mid-Cap Fund - Regular Plan - Growth and Capital	₹ 100,000	100.00%	₹ 100,000
Mid-Cap India Mid-Cap Fund - Growth and Capital	₹ 100,000	100.00%	₹ 100,000
Mid-Cap India Mid-Cap Fund - Growth and Capital	₹ 100,000	100.00%	₹ 100,000
HDFC Small Cap Fund - Growth and Capital	₹ 100,000	100.00%	₹ 100,000

All the funds have delivered a fairly decent positive return. Also, notice the ten-year performance of small and mid-cap funds are better than the large-cap funds; this should be evident to you because small and mid-cap funds are more volatile compared to large-cap funds.

The intent behind investing in either of these funds is the same as large-cap i.e. wealth creation over a long period. However, you expect a return much higher than a large-cap fund (against much higher volatility). This is obvious because the fund contains companies which have a long headroom for growth. As the company grows, so would the returns.

The **large and mid-cap fund** is a cocktail of both mid and large-cap stocks. Unlike an exclusive large/mid/small-cap fund, the 'large & mid' cap fund is expected to have 35% of its investment in large-cap and another 35% in mid-cap stocks. For example, this [DSP large and mid-cap fund](#) has stocks like Infosys, Airtel, HDFC Bank, and also, stocks like Hexaware, Hatsun Agro, and V Guard. Technically the fund can be a 65% large (or mid) and 35% mid (or large) cap stocks. The extent of the skew depends on the fund manager.

Since the large and mid-cap fund is a mixed bag, the expectation on the return front is slightly higher than a regular large-cap fund but lower than a small-cap fund. The risk is higher than a large-cap fund but lower compared to mid or small-cap fund. Here is how the returns for small and mid-cap stack up for the last ten years –

Return	Asset Class	Regular Plans	Download Data	Sort by Return (asc or desc)	
Net returns between start and end date: 01-01-2018	18-01-2020	18-01-2020	Download Data	Sort by Return (asc or desc)	
Search:					
Scheme Name (1)	Category (1)	AUM (Cr.) (1)	Monthly Returns (1)	Annualized Returns (1)	Price of 100 Investment (1)
Kovach Global Emerging Equities - Regular Plan - Growth (cap & div) Fund	3	3004.14	431.48%	18.22%	1174.87
Praxial Emerging Markets Fund - Growth (cap & div) Fund	3	1994.60	244.96%	14.13%	1449.58
Samco India Growth Opportunities Fund - Growth (cap & div) Fund	3	3238.96	126.24%	10.49%	1263.37
SIIF Equity Opportunities Fund - Regular Plan - Growth (cap & div) Fund	3	5088.84	178.88%	10.00%	1181.75
SIIF Equity Opportunities Fund - Growth (cap & div) Fund	3	2926.04	171.76%	10.00%	1113.76
SIIF Large & MidCap Fund - Regular Plan - Growth (cap & div) Fund	3	3994.75	171.27%	10.00%	1112.87
L&T Large and MidCap Fund - Growth (cap & div) Fund	3	1001.00	169.44%	10.00%	1094.29
L&T Large and MidCap Fund - Regular Plan - Growth (cap & div) Fund	4	167.14	174.17%	10.00%	1241.67
Aditya Birla Sun Life Equity Advantage Fund - Regular Plan - Growth (cap & div) Fund	4	4761.88	166.50%	10.00%	1079.18
Franklin India Equity Advantage Fund - Growth (cap & div) Fund	3	2482.79	161.88%	10.00%	1078.85
Tata Large & Mid Cap Fund - Regular Plan - Growth (cap & div) Fund	4	4507.84	149.50%	10.00%	990.85
Indiabulls Large and Mid Cap Fund - Growth (cap & div) Fund	4	1871.82	148.00%	10.00%	1009.10
SIIF Praxial Large & MidCap Fund - Growth (cap & div) Fund	3	3342.09	141.50%	10.00%	1174.79
SIIF Core Equity Fund - Regular Plan - Growth (cap & div) Fund	3	3761.09	138.67%	9.88%	1186.68
SIIF Core Equity Fund - Growth (cap & div) Fund	1	888.88	136.90%	8.99%	1079.88
Nippon India Vantage Fund - Growth (cap & div) Fund	1	3826.17	131.37%	8.27%	1113.79
SIIF Growth Opportunities Fund - Regular Plan - Growth (cap & div) Fund	3	1079.88	127.47%	7.50%	1074.88
SIIF AXA Large & Mid Cap Equity Fund - Regular Plan - Growth (cap & div) Fund	3	1076.88	108.00%	7.88%	1009.88

By the way, given that there are so many AMC's and therefore so many different funds for the same category, how would one narrow down on a single fund to invest in? Well, this is a different topic altogether, and it involves looking at various parameters on risk, returns, performance, and costs. We will take this up after we finish all our discussions on MF categories.

In the next chapter, we will discuss the remaining few Equity subcategories and then move to debt.

Key takeaways from this chapter

- Large-cap stocks – 1st to 100th company in terms of full market capitalization
- Mid-cap stocks – 101st to 250th company in terms of full market capitalization
- Small-cap stocks – 250th company onwards in terms of full market capitalisation
- Large-cap funds should contain at least 80% in large-cap stocks. Large-cap funds are expected to have lower volatility and steady returns
- Mid-cap and small-cap funds have higher volatility and return expectation compared to the large-cap funds
- Mid and large-cap stocks contain at least 35% each of mid and large-cap stocks.

CHAPTER 10

Equity Scheme (Part 2)

10.1 – Multicap funds



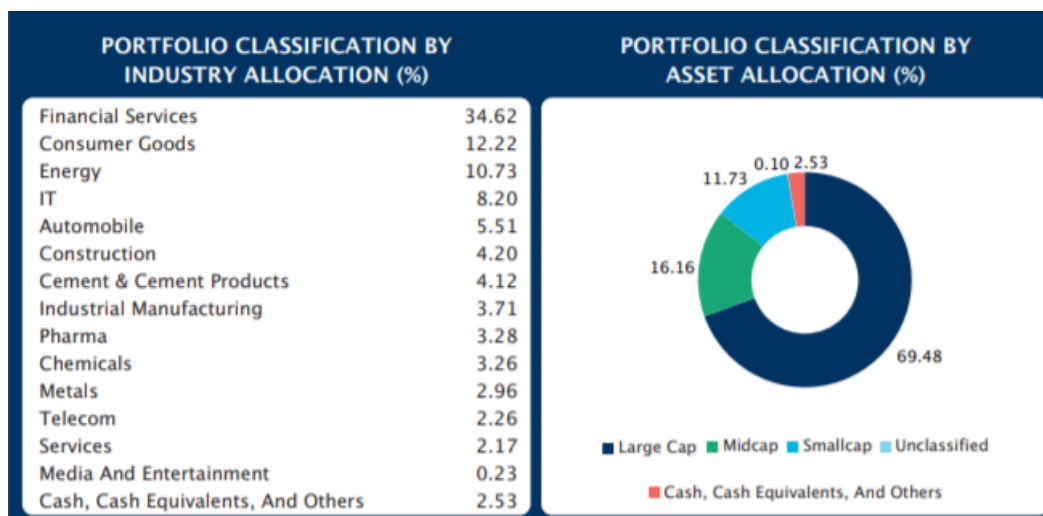
We discussed the equity scheme and a few of its subcategories in the previous chapter. We will take that discussion forward in this chapter.

Next up is the multi-cap funds. As the name implies, a multi-cap fund is not bound to particular market capitalization. The fund manager is free to pick stocks from the entire market and create a diversified portfolio (the diversification is mainly in terms of market capitalization). In a sense, the fund manager is chasing opportunities that he thinks make sense. The only mandate for a multi-cap fund is that it should consist of 65% investments in equity and related instruments.

Have a look at the portfolio of [SBI's Multicap fund](#) –

PORTFOLIO			
Stock Name	(%) Of Total AUM	Stock Name	(%) Of Total AUM
Equity Shares		Power Grid Corporation Of India Ltd.	1.19
HDFC Bank Ltd.	8.82	Cholamandalam Investment & Finance Co. Ltd.	1.16
ICICI Bank Ltd.	6.99	Marico Ltd.	1.09
Tata Consultancy Services Ltd.	4.96	Mahindra & Mahindra Financial Services Ltd.	1.06
Kotak Mahindra Bank Ltd.	4.41	Oil & Natural Gas Corporation Ltd.	1.04
Axis Bank Ltd.	3.87	Blue Star Ltd.	1.04
State Bank Of India	3.42	Alkem Laboratories Ltd.	1.03
Larsen & Toubro Ltd.	3.33	Torrent Power Ltd.	1.02
HCL Technologies Ltd.	3.24	Sheela Foam Ltd.	1.02
Hindalco Industries Ltd.	2.96	ICICI Lombard General Insurance Company Ltd.	0.96
Maruti Suzuki India Ltd.	2.94	Torrent Pharmaceuticals Ltd.	0.89
Gujarat State Petronet Ltd.	2.88	Deepak Nitrite Ltd.	0.88
JK Cement Ltd.	2.83	Camlin Fine Sciences Ltd.	0.85
Bharat Petroleum Corporation Ltd.	2.48	ABB India Ltd.	0.85
Colgate Palmolive (India) Ltd.	2.44	Kajaria Ceramics Ltd.	0.76
Bharti Airtel Ltd.	2.26	Spicejet Ltd.	0.72
ITC Ltd.	2.19	Carborundum Universal Ltd.	0.64
AU Small Finance Bank Ltd.	2.16	Emami Ltd.	0.62
Asian Paints Ltd.	1.92	Chennai Petroleum Corporation Ltd.	0.59
Crompton Greaves Consumer Electricals Ltd.	1.90	SKF India Ltd.	0.55
ICICI Prudential Life Insurance Company Ltd.	1.77	Reliance Industries Ltd.	0.32
Cummins India Ltd.	1.57	UFO Moviez India Ltd.	0.23
Fine Organic Industries Ltd.	1.53	Sobha Ltd.	0.11
The Indian Hotels Company Ltd.	1.45	ABB Power Products & Systems India Ltd.	0.10
Divi's Laboratories Ltd.	1.36	Total	97.47
Tata Motors Ltd.	1.35	Cash, Cash Equivalents, And Others	2.53
Star Cement Ltd.	1.29	Grand Total	100.00
Eicher Motors Ltd.	1.22		
Gail (India) Ltd.	1.21		

The portfolio contains large-cap stocks like HDFC Bank Ltd to a relatively small company like UFO Moviez Ltd. Of course, the investments in these stocks are of varying degrees; this is the Fund manager's call. The portfolio mix in terms of capitalization is also dependent on the fund manager. The portfolio mix for SBI multi-cap fund looks like this –



Now, given the fact that the fund is diversified across the different market capitalization, the AMCs tend to benchmark multi-cap funds to the S&P BSE 500 index or the NSE 500 index. These indices are broad and contain the top 500 companies by market capitalization.

Given the fact that the multi-cap fund has a mix of market capitalization, the return expectation is on the higher side. The higher return expectation is also associated with a higher risk. Here is a summary of the returns from Multi cap funds for 10 years –

Returns SIP Returns Risk Ratios Portfolio NAV Details

<input type="button" value="Historic Returns"/> <input type="button" value="Investment Returns"/> <input type="button" value="Monthly"/> <input type="button" value="Quarterly"/> <input type="button" value="Annual"/> <input type="button" value="Rank within Category"/> <input type="button" value="Point to Point Return"/>					
Get returns between start and end date <input type="text" value="01-01-2010"/> <input type="text" value="21-01-2020"/> <input type="button" value="Submit"/>					
Search: <input type="text"/> <input type="checkbox"/> Direct Plans <input checked="" type="checkbox"/> Regular Plans Download Data <small>NAV & Returns data as on: 20-Jan-20.</small>					
Scheme Name ↕	Crisil Rank ↕	AuM (Cr) ↕	Absolute Returns ↕	Annualized Returns ↕	Value of 1000 Investment ↕
Kotak Standard Multicap Fund - Growth <small>Multi Cap Fund</small>	4 ★	29597.85	257.08%	13.49%	3570.82
HDFC Equity Fund - Growth <small>Multi Cap Fund</small>	3 ★	23737.12	191.36%	11.22%	2913.56
Aditya Birla Sun Life Equity Fund - Regular Plan - Growth <small>Multi Cap Fund</small>	3 ★	11856.05	209.03%	11.87%	3090.33
Franklin India Equity Fund - Growth <small>Multi Cap Fund</small>	2 ★	11194.17	211.79%	11.97%	3117.88
Nippon India Multicap Fund - Growth <small>Multi Cap Fund</small>	2 ★	10343.12	238.77%	12.89%	3387.68
UTI Equity Fund - Growth <small>Multi Cap Fund</small>	4 ★	10217.42	218.89%	12.22%	3188.86
SBI Magnum MultiCap Fund - Growth <small>Multi Cap Fund</small>	4 ★	8479.69	194.16%	11.32%	2941.64
IDFC Multi Cap Fund - Regular Plan - Growth <small>Multi Cap Fund</small>	3 ★	5588.68	273.73%	14.00%	3737.30
ICICI Prudential Multicap Fund - Growth <small>Multi Cap Fund</small>	3 ★	4744.81	203.63%	11.67%	3036.31
ICICI Prudential Multicap Fund - Growth <small>Multi Cap Fund</small>	3 ★	4744.81	203.63%	11.67%	3036.31
DSP Equity Fund - Regular Plan - Growth <small>Multi Cap Fund</small>	5 ★	3266.65	198.88%	11.50%	2988.76
L&T Equity Fund - Growth <small>Multi Cap Fund</small>	2 ★	2678.82	184.75%	10.96%	2847.53
Canara Robeco Equity Diversified - Regular Plan - Growth <small>Multi Cap Fund</small>	5 ★	1634.14	204.06%	11.69%	3040.59
Invesco India Multicap Fund - Growth <small>Multi Cap Fund</small>	2 ★	850.04	344.63%	15.99%	4446.32
Baroda Multi Cap Fund - Plan A - Growth <small>Multi Cap Fund</small>	2 ★	809.87	104.27%	7.36%	2042.69
Principal Multi Cap Growth Fund - Growth <small>Multi Cap Fund</small>	1 ★	732.18	190.69%	11.19%	2906.91
BNP Paribas Multi Cap Fund - Growth <small>Multi Cap Fund</small>	3 ★	692.92	239.22%	12.91%	3392.16
HSBC Multi Cap Equity Fund - Growth <small>Multi Cap Fund</small>	1 ★	436.84	177.72%	10.69%	2777.24
LIC MF Multicap Fund - Growth <small>Multi Cap Fund</small>	4 ★	303.54	106.63%	7.48%	2066.26
Taurus Starshare (Multi Cap) Fund - Growth <small>Multi Cap Fund</small>	1 ★	220.51	128.41%	8.56%	2284.06
JM Multicap Fund - Growth <small>Multi Cap Fund</small>	5 ★	143.28	132.68%	8.76%	2326.75

As you can see, the returns average about 10 – 11%, the lowest being 7.36% and higher is around 16%.

This leads us to an interesting point. The AMC is an asset-gathering machine. It tries to attract more and more funds to its schemes. Imagine, a multi-cap fund does the asset gathering part very well and gathers a ton of assets. What do you think will happen to this fund?

Well, as the asset size grows, they will have to deploy this fund into stocks. Unfortunately, in the Indian stock markets, the liquidity in the small-cap space is not much, hence the fund is forced to invest the funds in large and mid-cap funds.

Hence, as the asset base grows, a Multi cap fund tends to work like a large and mid-cap fund. This probably explains why the SBI Multicap fund (8.5K Crore in AUM) has nearly 70% of its investments in large-cap stocks.

The one thing you need to keep in mind when investing in a multi-cap fund is the 'fund manager' risk. Since the fund invests in stocks across the spectrum, the performance is largely dependent on the kind of stocks and the proportion the fund manager decides to invest.

By the way, in my opinion, if you are completely new to mutual funds and don't know where to start and which category to pick, then I'd suggest you start with a multi-cap fund. Think of this as going for a buffet dinner, where you get a bit of everything.

10.2 – Focused Funds

We have discussed a few equity categories by now. I hope you've looked at the fact sheet and portfolio composition of some of the funds. If you have, then one thing that comes across quite evidently is the number of stocks in the portfolio. It is very common for equity mutual funds to have a large portfolio size (in terms of the number of stocks), the numbers average to about 60-70 stocks in a typical equity portfolio.

The common theory is that the higher the number of stocks, the lower is your risk (and of course the return).

A focused fund does things differently. The focused funds, as the name suggests, contains a maximum of 30 stocks in the portfolio, thereby creating a concentrated portfolio. A concentrated portfolio is a portfolio with few stocks (max 30 in this case), but each stock is picked only after rigorous due diligence. In the investment world, they call this high conviction bets. The average number of stocks in focused funds is about 25 and if I'm not wrong, JM Financials's focused fund is perhaps the only fund with just about 11 stocks. They call this fund the core 11. Their portfolio looks like this –

JM Core 11 Fund -An open ended equity scheme investing in maximum 11 Multi Cap stocks					Rs. In Lakhs
Name of the Instruments	Industry/Rating	Quantity	Market Value	% age to NAV	ISIN
EQUITY & EQUITY RELATED					
a) Listed/Awaiting Listing On Stock Exchange					
Bajaj Finance Ltd.	Finance	12,365	523.63	9.37	INE296A01024
Voltas Ltd.	Consumer Durables	78,730	519.07	9.29	INE226A01021
Maruti Suzuki India Ltd.	Auto	6,949	512.04	9.17	INE385B01010
Titan Company Ltd.	Consumer Durables	42,855	509.10	9.11	INE280A01028
Asian Paints Ltd.	Consumer Non Durables	28,480	508.35	9.10	INE021A01026
HDFC Bank Ltd.	Banks	39,520	502.73	9.00	INE040A01034
Petronet LNG Ltd.	Gas	185,450	496.91	8.90	INE347G01014
Axis Bank Ltd.	Banks	65,550	494.31	8.85	INE238A01034
Tech Mahindra Ltd.	Software	63,848	486.71	8.71	INE669C01036
Shree Cement Ltd.	Cement	2,370	482.63	8.64	INE070A01015
Larsen & Toubro Ltd.	Construction Project	33,247	431.61	7.73	INE018A01030
Sub Total:			5,467.10	97.88	

Since the number of stocks is limited in a focused fund, the risk and return profile of the focused fund changes drastically compared to other equity mutual funds. As you can imagine, the focused funds offer the possibility of a higher return along with higher risk.

Have a look at the return profile of the focused mutual fund –

Returns SIP Returns Risk Ratios Portfolio NAV Details

Historic Returns Investment Returns Monthly Quarterly Annual Rank within Category **Point to Point Return**

Get returns between start and end date 01-01-2010 29-01-2020 Submit

Search: Direct Plans Regular Plans [Download Data](#) NAV & Returns data as on: 28-Jan-20.

Scheme Name	Crisil Rank	AuM (Cr)	Absolute Returns	Annualized Returns	Value of 1000 investment
SBI Focused Equity Fund - Regular Plan - Growth Focused Fund	4 ★	6924.40	377.81%	16.78%	4778.14
Franklin India Focused Equity Fund - Growth Focused Fund	3 ★	8919.89	261.39%	13.59%	3613.87
Nippon India Focused Equity Fund - Growth Focused Fund	2 ★	4304.34	256.34%	13.43%	3563.38
Quant Focused Fund - Growth Focused Fund	-	4.73	214.48%	12.04%	3144.83
Aditya Birla Sun Life Focused Equity Fund - Regular Plan - Growth Focused Fund	3 ★	4422.12	208.17%	11.81%	3081.72
Principal Focused Multicap Fund - Growth Focused Fund	3 ★	360.81	173.40%	10.49%	2734.01
ICICI Prudential Focused Equity Fund - Retail - Growth Focused Fund	2 ★	652.51	137.32%	8.95%	2373.19
Sundaram Select Focus - Growth Focused Fund	4 ★	1056.19	126.89%	8.47%	2268.94
HDFC Focused 30 Fund - Growth Focused Fund	1 ★	509.53	126.14%	8.43%	2261.44
IDFC Focused Equity Fund - Regular Plan - Growth Focused Fund	2 ★	1505.81	121.95%	8.23%	2219.47
Sponsored Adv	2 ★	652.51	137.32%	8.95%	2373.19
JM Core 11 Fund - Growth Focused Fund	3 ★	55.85	102.48%	7.25%	2024.76

Over the last ten years, the returns range from 7.25% on the lower side to 16.75% on the higher side. These returns should give you a sense of how the risk profile of the focused funds.

I like to think of a focused fund as a poor man's 'Portfolio Management Services', you get similar returns at a much lower cost and entry criteria.

This also leads me to the next point – the focused fund is not for someone who is starting his or her mutual fund investment journey. I'm saying this because the focused fund will be a lot more volatile compared to a diversified mutual fund. I think it is very important to familiarize oneself with the volatile nature of these investments and slowly ease up to the idea of market-linked investments. If you start straight away with Focused funds, I'm afraid this experience will be a bit harsh and may convince you to never look at MF as an

investment option. I think a focused fund will be a great addition to the mutual fund portfolio at a slightly mature state in the investment journey.

10.3 – Dividend yield funds

I wish there were a different name for this mutual fund category. The moment you see ‘dividend yield’ as a part of the fund’s name, it is only natural to expect that the mutual fund pays out regular dividends to its investors. However, this is not true at all. A dividend yield fund (or for that matter any other mutual fund) is under no obligation to pay out a dividend to its investors.

Given this, why do you think a dividend yield fund is called a dividend yield fund? Well, the name is representative of the strategy the fund follows. The strategy as you can imagine involves investing in companies that payout (high) dividends regularly.

Dividend yield = Dividend paid during the year/ stock price

For example, if Infosys trading at Rs.780/- per share pays a dividend of Rs.22/- for the year, then Infosys’s dividend yield is –

$$= 22/780$$

$$= \mathbf{2.8\%}$$

Here is SEBI’s definition for this category –

6	Dividend Fund	Yield	Scheme should predominantly invest in dividend yielding stocks. Minimum investment in equity- 65% of total assets	An open ended equity scheme predominantly investing in dividend yielding stocks
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As you can see, the fund is predominantly invested i.e. at least 65% in dividend-yielding stocks. There are two aspects to this –

The fund invests 65% of the corpus in dividend-yielding stocks; the balance 35% is open for other investments, which means that this portion (35%) may be invested in non-dividend-yielding stocks

Ideally, these funds should invest in high dividend-yielding stocks. So one has to define what ‘high dividend’ really means. The lack of clear definition leads to inconsistencies in-stock selection. For example, a fund manager simply states that high dividend yield is anything greater than 0.75% and another fund manager may want to benchmark it against the indices dividend yield. For example, check out the UTI Dividend yield fund –

Fund Facts <small>As of 31 Dec 2019</small>		
Month End AuM : ₹ 2,345.60 Cr	Total Expense Ratio : Direct: 1.63 , Regular: 1.99	Exit Load : 1% if less than 1 Year
Monthly Avg. AuM : ₹ 2,351.54 Cr	Benchmark Index : Nifty Dividend Opportunities 50	
No. of Folio Accounts : 2,57,947	Special Facilities :	
Minimum Investment Amount : ₹ 5,000	STRIP/SWP/SIP/Switch/Redeem	

They benchmark themselves to the Nifty Dividend opportunity 50 indexes.

The fund’s portfolio, as you can imagine consists of companies which are well established and consistent dividend-paying –

Portfolio as on December 31, 2019	
Equity	% of NAV
Infosys Ltd.	8.42
Glaxosmithkline Consumer Healthcare Ltd.	6.04
Tech Mahindra Ltd.	5.91
Tata Consultancy Services Ltd.	5.47
ICICI Bank Ltd.	5.30
ITC Ltd.	4.72
Mphasis Ltd.	4.68
NTPC Ltd.	3.06
Bharat Petroleum Corporation Ltd.	2.92
Sanofi India Ltd.	2.85
GAIL (India) Ltd.	2.48
Vedanta Ltd.	2.23
Great Eastern Shipping Co. Ltd.	2.22
Hero Motocorp Ltd.	2.16
Torrent Pharmaceuticals Ltd.	2.13
ICICI Prudential Life Insurance Company Ltd.	2.05
Hindustan Petroleum Corporation Ltd.	2.05
Coromandel International Ltd.	2.04
Hindustan Zinc Ltd.	1.93
Procter & Gamble Hygiene & Hel Care Ltd.	1.93
ICICI Securities Ltd.	1.82
Coal India Ltd.	1.72
Power Grid Corporation Of India Ltd.	1.70
Oil & Natural Gas Corporation Ltd.	1.51
Larsen & Toubro Infotech Ltd.	1.34
Cummins India Ltd.	1.33
Castrol India Ltd.	1.31
Muthoot Finance Ltd.	1.29
Indian Oil Corporation Ltd.	1.20
Akzo Nobel India Ltd.	1.13
Others	13.86
Net Current Assets	1.20
Total	100.00

The last ten-year performance of dividend yield funds are as follows –

Get returns between start and end date 01-02-2010 30-01-2020 <input type="button" value="Submit"/>					
Search: <input type="text"/>	<input type="checkbox"/> Direct Plans	<input checked="" type="checkbox"/> Regular Plans	Download Data	NAV & Returns data as on: 31-Jan-20.	
Scheme Name	Crisil Rank	AuM (Cr)	Absolute Returns	Annualized Returns	Value of 1000 investment
Aditya Birla Sun Life Dividend Yield Fund - Regular Plan - Growth Dividend Yield Fund	1 ★	752.87	143.78%	9.32%	2437.85
UTI Dividend Yield Fund - Growth Dividend Yield Fund	1 ★	2345.60	150.45%	9.62%	2504.48
Templeton India Equity Income Fund - Growth Dividend Yield Fund	-	908.51	173.62%	10.59%	2736.19
Principal Dividend Yield Fund - Growth Dividend Yield Fund	3 ★	183.33	182.17%	10.93%	2821.68

As you can see, the performance is fairly standard across these funds.

I'm personally not a big fan of dividend yield fund simply because I prefer to take that extra risk with growth stocks. Of course, the decision to invest or not to invest depends on the portfolio goals of the individual.

10.3 – ELSS Funds

The ‘Equity-linked Savings Scheme’ or the ELSS funds are a special category of mutual funds that enjoy tax exemption on investments made under section 80C of the Indian Income-tax Act, 1961.

As you may be aware, section 80C in the income tax act allows you to reduce your tax burden by accommodating for certain investments and payments made during the financial year, the reduction in the tax burden, however, is up to Rs.1,50,000/- per year.

For example, if you have a total gross yearly income of Rs.1,200,000/- then you can choose to invest Rs.1,50,000/- in various 80C options and reduce the tax burden. If you do so, your taxable income reduces to 1,050,000/-.

Amongst the various investment options permitted under section 80C, investments in ELSS mutual fund is one of them. You can choose to invest either the entire permitted amount of Rs.1,50,000/- in ELSS or split this amount across many different schemes such as Life Insurance, Public Provident Fund, five year FD, Sukanya Smariddi Yojana, etc.

The decision to do so depends on your overall financial planning strategy. Of course, we will discuss this more as we progress in this module.

Here is how SEBI describes an ELSS fund –

10	ELSS	Minimum investment in equity & equity related instruments - 80% of total assets (in accordance with Equity Linked Saving Scheme, 2005 notified by Ministry of Finance)	An open ended equity linked saving scheme with a statutory lock in of 3 years and tax benefit
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There are two important things to note here –

ELSS funds have a mandatory lock-in of 3 years. I guess this the Government's way of inculcating long term investing behavior 😊

ELSS funds have a mandate to invest 80% of the funds in equity and equity-related instruments. There is no restriction on the market capitalization of stocks.

Many people wrongly assume that ELSS funds are a proxy for a pure large-cap fund but this is not entirely true. ELSS mutual fund, in general, can probably be considered as a proxy for a multi-cap fund. The data below helps you understand this –

SCHEME NAME	LARGE CAP(%)	MID CAP(%)	SMALL CAP(%)	DEBT & OTHER (%)
Aditya Birla Sun Life Tax Plan - Dir - Growth	48.2	39.4	10.6	1.8
Aditya Birla Sun Life Tax Relief 96 - Dir - Growth	47.3	40.2	10.3	2.1
Axis Long Term Equity Fund - Dir - Growth	73.1	22.7	1.6	2.6
Baroda ELSS 96 - Plan B - Dir - Growth	67.7	18.0	7.9	6.4
BNP Paribas Long Term Equity Fund - Dir - Growth	69.6	20.9	5.8	3.6
BOI AXA Tax Advantage Fund - Dir - Growth	56.1	32.4	9.5	2.1
Canara Robeco Equity Tax Saver Fund - Dir - Growth	79.7	15.4	2.1	2.7
DSP Tax Saver Fund - Dir - Growth	76.1	13.5	8.1	2.4
Edelweiss Long Term Equity Fund (Tax Savings) - Dir - Growth	71.7	18.5	8.2	1.7
Edelweiss Tax Advantage Fund - Dir - Growth	77.1	19.0	2.5	1.3
Essel Long Term Advantage Fund - Dir - Growth	53.1	23.1	20.9	3.0
Franklin India Taxshield - Dir - Growth	75.1	12.4	4.2	8.3
HDFC Long Term Advantage Fund - Dir - Growth	74.8	5.3	14.4	5.5
HDFC Tax saver - Dir - Growth	83.7	8.0	4.1	4.2
HSBC Tax Saver Equity Fund - Dir - Growth	72.1	16.8	8.0	3.1
ICICI Prudential Long Term Equity Fund (Tax Saving) - Dir - Growth	69.6	9.2	13.7	7.5
IDBI Equity Advantage Fund - Dir - Growth	40.9	44.9	7.9	6.3
IDFC Tax Advantage (ELSS) Fund - Dir - Growth	48.6	18.5	28.2	4.8
Indiabulls Tax Savings Fund - Dir - Growth	74.8	4.3	0.1	20.8
Invesco India Tax Plan - Dir - Growth	71.9	17.2	7.5	3.4
ITI Long Term Equity Fund - Dir - Growth	63.8	17.8	16.0	2.5
JM Tax Gain Fund - Dir - Growth	70.3	25.8	0.1	3.8
Kotak Tax Saver Fund - Dir - Growth	59.0	27.0	10.6	3.4
L&T Tax Advantage Fund - Dir - Growth	64.3	24.0	9.5	2.1
LIC MF Tax Plan - Dir - Growth	57.4	32.6	4.3	5.8
Mahindra Kar Bachat Yojana - Dir - Growth	80.6	15.0	3.1	1.4
Mirae Asset Tax Saver Fund - Dir - Growth	74.3	17.6	7.3	0.8
Motilal Oswal Long Term Equity Fund - Dir - Growth	68.6	23.9	4.8	2.6
Nippon India Tax Saver (ELSS) Fund - Dir - Growth	59.3	22.9	14.2	3.6
Parag Parikh Tax Saver Fund - Dir - Growth	52.0	10.7	18.7	18.7
PGIM India Long Term Equity Fund - Dir - Growth	70.6	11.6	12.1	5.7
Principal Personal Tax saver - Dir	76.3	15.2	6.3	2.1
Principal Tax Savings Fund - Dir	75.4	15.0	6.2	3.5
Quant Tax Plan - Dir - Growth	69.6	12.2	17.2	1.1
Quantum Tax Saving Fund - Dir - Growth	75.5	12.5	1.4	10.6
SBI Magnum Tax Gain Scheme 93 - Dir - Growth	73.3	11.4	10.2	5.1

That's the list of the 40 top ELSS funds and as you can see, 23 funds have less than 70% in large-cap stocks and 17 of them have over 70% invested in large-cap stocks. Some of the funds like the IDFC Tax Advantage Fund have a fairly decent mix across all market capitalization, which makes it a clean multi-cap fund.

Again, when you select an ELSS fund, the decision should depend on your overall portfolio structure. For example, there is no point in having a large-cap fund and again opting to invest in a fund like HDFC Tax saver, because HDFC Tax saver has 83% invested in the large-cap stock.

The performance of ELSS funds for the last ten years is as follows –

Returns SIP Returns Risk Ratios Portfolio NAV Details

Scheme Name ↕	Crisil Rank ↕	AUM (Cr) ↕	Absolute Returns ↕	Annualized Returns ↕	Value of 1000 Investment ↕
Axis Long Term Equity Fund - Growth <small>ELSS</small>	5 ★	21472.82	400.00%	17.44%	5000.04
Nippon India Tax Saver Fund - Growth <small>ELSS</small>	1 ★	10813.57	195.28%	11.42%	2952.84
Aditya Birla Sun Life Tax Relief 96 - Regular Plan - Growth <small>ELSS</small>	3 ★	10029.20	213.02%	12.07%	3130.22
HDFC Tax Saver Fund - Growth <small>ELSS</small>	1 ★	7454.46	153.47%	9.74%	2534.68
SBI Magnum Tax Gain Scheme - Growth <small>ELSS</small>	2 ★	7370.28	156.54%	9.87%	2565.45
SBI Magnum Tax Gain Scheme - Growth <small>ELSS</small>	2 ★	7370.28	156.54%	9.87%	2565.45
ICICI Prudential Long Term Equity Fund (Tax Saving) - Growth <small>ELSS</small>	3 ★	6707.34	218.00%	12.25%	3179.96
DSP Tax Saver Fund - Regular Plan - Growth <small>ELSS</small>	4 ★	6259.99	248.50%	13.28%	3485.04
Franklin India Taxshield Fund - Growth <small>ELSS</small>	3 ★	4123.88	225.01%	12.49%	3250.05
L&T Tax Advantage Fund - Growth <small>ELSS</small>	2 ★	3382.35	208.66%	11.92%	3086.59
Sundaram Diversified Equity - Growth <small>ELSS</small>	2 ★	2577.73	154.14%	9.76%	2541.42
IDFC Tax Advantage (ELSS) Fund - Regular Plan - Growth <small>ELSS</small>	2 ★	2119.37	227.24%	12.57%	3272.38
UTI Master Equity Plan Unit Scheme <small>ELSS</small>	-	1831.87	165.87%	10.26%	2658.69

These are for a few of the top funds in terms of AUM. As you can see, the returns average about 11-12%, which I think is in line with the multi-cap fund.

I think the last two chapters have laid down a brief introduction to equity mutual funds. We will now proceed to understand the basics of debt funds and cover as many subcategories as possible. Once we are through with this, we will proceed to understand the techniques of selecting a mutual fund and building a mutual fund portfolio.

All of this and more in the coming few chapters. So stay tuned for more 😊

The key takeaway from this chapter

- A multi-cap fund does not have any restrictions on where it can invest. The manager invests in any stocks across market caps (large, mid, and small) where he sees opportunities.
- One of the risks to watch out for in a multi-cap fund is the ‘fund manager risk.’
- A focused fund consists of not more than 30 stocks in its portfolio. These are high conviction bets by the fund manager
- The risk and return of a focused fund is higher compared to any other equity oriented fund
- A dividend yield fund does not mean the fund pays regular dividends to its investors
- The dividend yield fund invests in high dividend-yielding stocks
- ELSS funds are tax saving funds under section 80C of the Indian Income Tax act 1961
- A maximum investment of 1,50,000/- is permitted under
- An ELSS fund is considered a proxy for a multi-cap fund

CHAPTER 11

The Debt Funds (Part 1)

11.1 – The origins of debt

Over the next couple of chapters, we will cover the basics of debt mutual funds. As you may recollect from the earlier chapters, there are about 16 debt mutual fund categories. I don't intend to discuss all these categories of a mutual fund, because a typical investor does not need these many categories of debt investment. Instead, I'll discuss the following which I think are essential –

1. Liquid funds
2. Overnight funds
3. Ultrashort term funds
4. Medium duration
5. Dynamic bonds
6. Corporate bond
7. Credit Risk
8. Banking & PSU
9. GILT funds (2 different types)

In my opinion, this is a fairly exhaustive list and will cover many different investment situations which may arise. However, if you would like to know more about a category which isn't discussed here, then please do post a comment and I'll be happy to give you clarifications in the comment section.

The debt-oriented, liquid, and overnight funds together constitute nearly 50% of the 27 lakh crore assets under management (AUM) in the mutual fund industry (as of Jan 2020). So as you can imagine, this is a relatively large chunk of investor money. The debt funds play an essential role in the investor's portfolio, and it serves a variety of purposes, including capital protection.

Before we understand how and when to use a debt fund, we need to understand a more fundamental concept, i.e. the origin of debt. To help you understand this, I'll take the example of a simple debt structure, which I guess we all would have come across directly or indirectly in our daily lives.

So let's get started. Assume you want to buy an apartment.



You do your research and shop around for the apartment with a checklist. After an exhaustive search, you eventually circle in on your dream apartment. The apartment comes with everything that you ever wanted – swimming pool, clubhouse, convention centre,

supermarket, tennis court, and everything else desirable. The apartment costs you a sweet 1.5Cr, all-inclusive. You have 40L stashed away in your bank, which suffices as the down payment. You still need 1.1Cr to fund the property purchase. How will you source the additional fund?

Chances are, you will approach a bank and request for a loan. The bank evaluates your request and either give you a loan or denies the loan. Needless to say, before deciding to provide you with a loan, the bank will do a ton of background work and dig up every bit of information about you. One of the critical inputs for the bank is your credit score issued by agencies such as CIBIL or Experian. The credit score is a reflection of your creditworthiness, higher the rating the better it is for you and of course, a low credit score implies no loan or a loan at an exorbitant interest rate.

So let us just assume that you have a fantastic credit score and the bank decides to give you a loan of 1.1Cr against your apartment purchase. The details of your loan are as follows –

Credit score: 850

Amount : Rs.1,10,00,000/-

Tenure: 10 years or 120 months

Interest rate: 8.5%

Total interest payable : Rs.53,66,129/-

Total payable (Int + Principal) : Rs.1,63,66,129/-

Monthly EMI: Rs.1,36,384/-

There are plenty of online calculators you can use to get these details. I've used the one available on Bajaj Finserv site. Of course, the credit score is arbitrary here 😊

These details, along with a bunch of terms and conditions are printed on a document. A stamp paper is attached with stamp duty paid, and the document is registered. Finally, both the parties sign off. A document such as this is called a loan agreement.

Finally, the loan amount is credited from the bank to your bank account. The apartment will remain hypothecated to the bank till the entire loan amount is repaid. The hypothecation works as backup security for the bank. In case you refuse to repay the loan, the bank can sell your apartment and make good their principal and interest.

From the bank's perspective, the loan is a 'collateralised loan,' because the loan is secured against collateral, i.e. the property in this case. A collateralised loan is a safer bet for the bank as opposed to a non-collateralised loan.

At this point, I want you to recognise how a debt obligation is created. A debt obligation is created when a person needs to carry out an economic activity for which the fund requirement is far higher than what is available to him.

Going back to the apartment case, assuming things go smoothly, on every month, for the next ten years the borrower is expected to pay back a sum of, i.e. Rs.1,36, 384/- to the bank. The regular inflow to the bank is the 'cash flow'.

So far, so good, this is a reasonably simple debt structure to understand. Let us now shift focus on the risk involved here. By risk, I mean the risk involved for the banker, i.e. the lender. What do you think can give the lender sleepless night?

There are a couple of things that can go wrong –

Cashflow risk – The borrower can skip paying a couple of EMIs and make irregular repayments. Irregular repayments mean that the bank will take a hit on the expected cash flow, potentially leading to a chain of undesirable events

Default risk – The borrower may get into an insolvent situation wherein servicing the loan becomes very difficult; hence the borrower decides not to repay. This is called 'default' or the 'default risk'.

Interest rate risk – The loan is given out at a specific interest rate. However, the economic situation may change, and the interest rates may drop in the future. This means that the bank will be forced to reduce the rates, and hence the expected cash flow takes a hit.

Credit rating risk – The bank evaluates the borrower's credit rating at the time of giving out the loan. At this point, the borrower's credit rating could be excellent. However, for whatever reasons, the credit rating of the borrower can suddenly degrade, thereby increasing the chance of default risk.

Asset risk – In case the borrower defaults, the bank has the right to sell the hypothecated property. What if the property itself loses its value? This is a double whammy situation for the lender or the bank. The bank loses both the principal and the asset.

These are the most common risk associated with a debt obligation. We have taken the example of a bank and an individual, the same can be extended to corporates as well.

Imagine a manufacturing company wants to build a new plant. The company needs about INR 800 Crores to commission this plant. How can they raise this money? There are two ways the company can raise this money –

Approach a bank and seek a loan, pretty much like the apartment case we discussed

Instead of a bank, the company can choose to raise a smaller amount of money from several people (investors). Say in multiples of 20Cr. The company, instead of paying interest to the bank, now pays the interest amount to multiple investors.

If the company takes the 1st approach and seeks a loan from the bank, then the binding agreement is called the 'loan agreement'. On the other hand, if the company decides to raise this money from multiple investors (multiple lenders), then the binding agreement is called '**bond**'.

Think of a bond as a promissory note from the company to its investors/lenders promising to repay the principal amount at the end of the tenure and a periodic interest amount, also called a coupon.

I agree this is a rather crude and unconventional way to introduce the concept of 'bond' to you, but I hope you get the point. A bond is a debt product wherein the lender with surplus capital provides capital to the borrower who requires the capital. In exchange for the

money, the borrower promises to pay interest (coupon payments) and repay the full principal at the end of the tenure.

As simple as that.

The risks that we discussed in the bank-apartment example applies to bonds as well. Three risks matter the most when it comes to the bonds –

Credit risk

Interest rate risk

Price risk

At this point, if you've managed to understand what a bond is, the risk applicable (very briefly) then I suppose we are off to an excellent start to learn more about the debt funds.

Remember this though – debt funds and the functioning of debt funds is one thing and investing (or trading) the bond is another thing. You as mutual fund investors should only be concerned about three things –

When to invest in a debt fund and how to choose one?

What a particular category of debt fund does

The risk associated with that category of debt fund

The fund manager of the debt fund should be concerned about investing or trading in the bond market.

The bond market is a reasonably big market, not just in India but across the world. Companies often issue bonds to full fill their

capital requirements and these bonds are subscribed by the investors.

The mutual fund companies which have the capital subscribe to bonds issued by the companies which have a capital requirement.

With this background, let's start discussing the different categories of debt funds.

11.2 – The liquid fund

The liquid fund is perhaps the most popular debt fund within the debt fund universe. A liquid fund makes investments in debt products which have a maximum maturity of up to 91 days.

In simple words, the liquid fund invests in debt obligations, wherein the borrower promises to repay the borrowed money (principal) within 91 days (maturity) of such borrowing.

Here is a typical example – Power Finance Corporation (PFC) of India needs 150 Crs to fund its working capital requirement. They agree to repay the borrowed amount to the lender within 50 days. PFC agrees to pay 8.5% interest (also referred to as the coupon) against this borrowing.

HDFC AMC has 150Cr to invest; they see this as an excellent opportunity to earn 8.5% interest; hence they give the funds to PFC.

The deal is done.

After 50 days, PFC repays 150Cr to HDFC AMC along with 8.5% interest.

Note, when any interest or coupon rate is quoted, it is quoted on an annual basis. So this is 8.5% for the 365 days. For 50 days, interest on a pro-rata basis is –

$$= (50 * 8.5\%)/365$$

$$= \mathbf{1.164\%}$$

So HDFC AMC will get back 150 Cr + 1.746Cr back from PFC.

I suppose this is a relatively simple deal to understand.

Like I mentioned earlier, a liquid fund by regulation can invest in debt which has a maximum maturity of 91 days. When a corporate entity borrows for such short term basis, they do so by issuing something called as a '**commercial paper**' or Cps. In the arbitrary PFC example I used, PFC is deemed to have issued a 50 day CP, which was subscribed by HDFC AMC.

The Government too borrows on a short term basis to fund its short term financial needs. However, when the Government borrows, it does not issue a CP but instead issues a **treasury bill**. The Government has three variants of t-bills –

1. 91-day T-Bills, the maturity of 91 days
2. 182-day T-Bill, the maturity of 182 days
3. 365 day T-bills, the maturity of 365 days

You can read more about the treasury bills or the T-Bills [here](#).

Now, place yourself as a lender, someone with surplus capital. You are looking for an opportunity to invest 100 Crs. There are two possible borrowers, both wanting 100Crs each –

A sugar manufacturer willing to offer 6.5% coupon

The Govt of India provides a 6.5% coupon

Whom would you lend? This is a no brainer; you'd give to the Govt because you know that with the Government, there is no credit risk. The Govt will repay, but the same cannot be said about the sugar manufacturer.

Does this mean that the sugar manufacturer will never get the required funds? Yes, as long as the sugar manufacturer offers a coupon equivalent to the Govt, it will be hard for them to source the fund. The lender will lend if he is compensated for credit risk; hence the coupon has to be higher than the equivalent T-bill.

So in this case, the sugar manufacturer should offer say 7 or 8%.

Let's extend this thought. Assume there are two sugar manufacturing companies –

Company A with an impeccable track record. It is in business for 25 years, profitable, and steady cash flows.

Company B, five years of operations, breaking even, backed by young entrepreneurs.

Both need 100 Crs. Both offer 8%, you have the money, whom would you lend?

Company A, of course, because company A has a better financial history, hence lesser probability of default.

Does that mean, Company B will never get the funds? Of course, they will, as long as they compensate the lender for the additional credit risk. Hence company B has to offer something like 10 or 11%.

The credit rating reveals the credit risk of a company. The credit rating of the equivalent to an individual's CIBIL score. The higher, the better, which also means companies with higher credit rating can borrow money by offering lower coupons.

In its portfolio, the liquid fund contains several CPs and T bills, while T bills are relatively safer, CPs aren't.

This leads me to the most critical point about liquid funds.

11.3 – Why liquid fund?

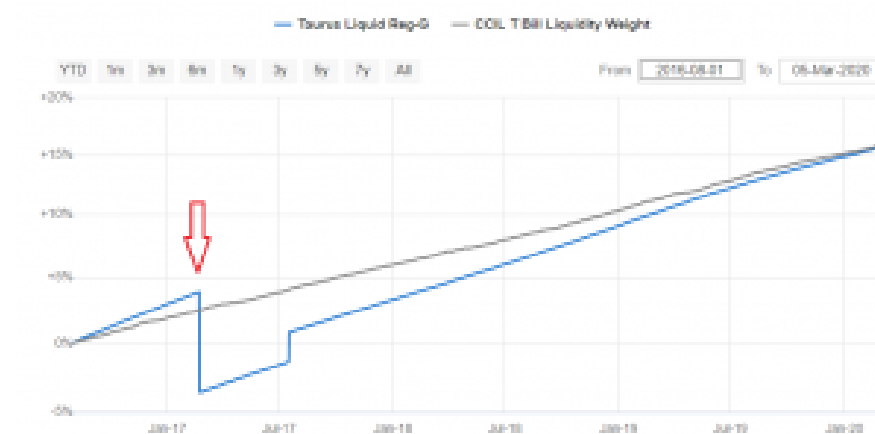
People invest in liquid funds to park cash, which they intend to use sometime soon. By 'sometime soon', I mean within a year or at the most within a year and a half. The purpose of this investment is to protect the capital, use it in its entirety for the purpose planned. So think about the liquid fund as a parking space for your excess funds.

Question is – why to invest in a liquid fund and why not let it be in a bank's savings account. Well, people opt to invest in a liquid fund because the liquid fund offers a slightly higher return compared to the bank's savings account.

The problem, however, is the fact that the liquid fund is often pitched as a better than a savings account (SA) or the fixed deposit (FD). This is not true at all. A liquid fund may offer higher than SA/FD account, but also comes with a certain amount of risk.

While this is a good liquid fund, it is still not risk-free, you can lose your money if something were to go wrong, which is not the case with a SA or FD.

To give you a perspective of how bad things can go, check this –



This is the NAV graph of Taurus AMC's Liquid fund. The NAV fell close to 7% on a single day in Feb 2017. All gains were wiped off, and in fact, the investors took a hit on their investment capital. It took almost a year for the fund to recover back to its previous levels.

The reason for this fall was that Taurus had nearly 2000Cr of CPs issued by Ballarpur Industries. The credit rating agencies downgraded Ballarpur's CPs, and that translated into a 7% vertical fall in NAV.

How Taurus tumbled

On 22 February, debt schemes of Taurus Asset Management Ltd fell nearly 12%. Here's how it impacted four of its debt schemes

Fund name	1-day return (%)	Size (Rs cr)
Taurus Dynamic Income	-11.82	63.01
Taurus Ultra Short Bond (Super institutional)	-11.79	125.33
Taurus Short-Term Income	-11.13	112.61
Taurus Liquid Super Institutional Plan	-7.22	1,639.58

Returns as on 22 February; corpus as on 31 January

Source: Morningstar

Anyway, I'd suggest you read this news article, and I think it puts all the discussion we have had till now in some perspective.

So if you are investing in Liquid funds, you need to be aware of a few things –

Invest only to park your spare cash

Expect a return slightly higher to your SA account

Liquid fund is not risk-free, you can lose money when you invest in it

Choose a fund which has relatively less default risk – meaning the liquid fund portfolio should have a higher concentration of Government securities.

I'll stop this chapter here. In the next chapter, I'll discuss the close cousin of the liquid fund, i.e. the ultra short term fund.

Stay tuned.

Key takeaways from this chapter

- When a corporate entity borrows funds (for more than one year), they do so by issuing bonds
- Corporate borrowings for less than a year is done via the issuance of a commercial paper or the CPs
- When the Government borrows, they do so by issuing a treasury bill or the T-Bill
- Against the borrowing, the borrower pays interest (coupon) to the lender
- The lender faces multiple risks when lending funds to the borrower
- Credit risk and interest rate risk is the primary risk for the lender
- Liquid funds invest only in CPs and T bills with a maximum maturity of 91 days
- Liquid fund is not a proxy for a savings bank account; it carries credit risk.

CHAPTER 12

The Debt Funds (Part 2)

12.1 – Overnight Fund

We are living in strange times, as I write this, the market is down nearly 30% from its peak. I've seen markets get hammered for a variety of reasons – recessions, business cyclicalities, fraud, political unrest, civil unrest, geopolitical tensions, wars, and heck even family feuds. But never in my wildest dreams could I imagine the markets getting trashed owing to a virus of an unknown origin.

I guess with COVID 19, we have seen it all. At least, I hope so :).

Nevertheless, we have to do what we have to do. So let us get back to the debt funds.



In the previous chapter, we introduced the concept of a bond or a debt structure and discussed the first debt mutual fund, i.e. the liquid fund. Do recall; the liquid fund is not risk-free as most people assume, it is susceptible to both default and credit rating risk. The Taurus MF and Ballarpur example highlighted this credit risk in liquid funds.

Both these risk types are significantly reduced (not eliminated) in an overnight debt fund. Remember, a liquid fund invests in papers maturing up to 91 days, this typically includes both the corporate commercial papers and the Govt's treasury bills.

An overnight fund, on the other hand, invests in securities which have one-day maturity. Think of this as lending money to someone for one day only. So at the start of the day, the Fund manager of an overnight Fund lends to 'someone' which is recovered back in 24 hours.

This is precisely what happens in an 'overnight debt mutual fund'.

Given the fact that the overnight fund invests (or lends) to 1-day debt obligation, the chance of a change in credit rating risk is low. The default risk still exists, although it is small.

The next obvious question is – who are these overnight fund lending to? Well, the overnight loan happens to an RBI regulated money market instrument called 'Tri party Repo' or the 'TREPS'.

I'll not get into the details of what a TREP is and its purpose, I think that will stray us from the main focus of this chapter. All you need to know is that a TREP is a relatively safe instrument wherein the act

Of course, we have not discussed the expense ratio, yet in this module, we will in the coming chapter.

So who would want to invest in an overnight fund? Well, this is an ideal fund for anyone looking at parking funds for a short term duration. By short term, I mean for less than three months.

Remember, if you want to park funds for more than three months or 90 days, you are better off looking at a liquid fund.

It is futile to look at the return aspect of an overnight fund. It does not make sense, because you don't invest in an overnight fund to chase 'returns', you do for the sake of convenience.

However, if you are interested, as of today, overnight funds yield around 4-5% annualized. So you can do the math on a pro-rata basis.

12.2 – Ultra-short duration Fund

Next up is the ultra short term debt mutual fund. Things in the debt mutual fund start getting interesting from now.

Think of yourself as a debt mutual fund manager. Your job as a fund manager is to find investments opportunities in the debt market. You can do so by investing the scheme's corpus in new bond/CP issues, or you can choose to buy these bonds from the secondary bond market.

Think of this as buying a stock at the IPO or buying it post the IPO from the stock exchanges. Now, the moment you buy it from the

secondary market, the price of the bond will (may) differ from the first issue price.

Why would the price vary? Well, for a host of reasons including the demand and supply dynamics of the bond.

Each time a bond is purchased, the bond manager expects a periodic coupon (interest) payment during the tenure of the bond and at the end of the tenure, the principal to be repaid.

Let us hold on to this thought for a moment. We will get back to this thread in a bit.

Think of another case. Your best friend needs Rs.10,000/-. He approaches you for it and promises to repay within a year. You decide to give him this money, interest-free.

Now, how long does it take for you to recover back your money? The time taken to get back your money is a year. It was easy to evaluate the time taken because there is no other cash flow in the form of interest repayment.

On the other hand, if there was an additional cash flow in terms of a coupon payment, paid every three months, then what do you think would be the time taken to recover the money?

While pinpointing to the exact number can be a bit tricky, intuition says that the time taken to recover the money is little lower than a full year, because there is cash flow. Do note; you can do some math and get the exact time to recover the money, but let's not get there.

The point to note is – in the presence of cash flow, the time to recover the principal is lesser.

With this point, let's go back to the previous thread.

Fund manager **A** subscribes to a bond at issuance. The specifications are as follows –

Face value = Rs.1000

Coupon = 8%

Coupon payment frequency = Semi-annual

Maturity = 3 years

Question – How long will the fund manager A take to recover the money invested in this bond?

Answer – Intuition says that it could be a little lesser than three years.

Fund manager **B** buys the same bond from the secondary market.

Now, we know that the bond prices fluctuate in the market. Assume the fund manager B pays Rs.1020 for the same bond.

Question – How long will the fund manager take to recover the money invested in this bond?

Answer – Intuition says Fund manager B will take slightly higher time to recover the price paid for the bond when compared to fund manager A.

Fund manager **C** buys the same bond from the secondary market.

Assume the fund manager pays Rs.980 for the same bond.

Question – How long will the fund manager take to recover the money invested in this bond?

Answer – Intuition says Fund manager C will take lesser time to recover the price paid for the bond when compared to Fund manager A.

I'm trying to make two points here –

Bond price fluctuates

Based on the price paid, the time to recover the invested amount varies.

There is an exact science to estimate the time to recover, that is an integral part of the bond math. The metric, 'time to recover', is called **'Macaulay's Duration of a Bond'**.

Why is 'Macaulay Duration' essential and why are we discussing that? Well, have a look at how SEBI defines the characteristics of an ultra-short duration fund –

Sr. No.	Category of Schemes	Scheme Characteristics	Type of scheme (uniform description of scheme)
1	Overnight Fund**	Investment in overnight securities having maturity of 1 day	An open ended debt scheme investing in overnight securities
2	Liquid Fund***	Investment in Debt and money market securities with maturity of upto 91 days only	An open ended liquid scheme
3	Ultra Short Duration Fund	Investment in Debt & Money Market instruments such that the Macaulay duration of the portfolio is between 3 months - 6 months	An open ended ultra-short term debt scheme investing in instruments with Macaulay duration between 3 months and 6 months (please refer to page no. 7 ⁴)

According to this definition, an Ultra Short duration fund can invest in short maturity bills and CPs, which has a maturity between 3 month and six months (90 to 180 days).

An important point to note here is that SEBI specifies this at a portfolio level and not restricted to an individual bill or CP. What this means is that the fund can buy CPs with a maturity of fewer than 90 days or maybe more than 180 days, they can even invest in TREPS, but at an overall portfolio level, the fund has to ensure that the Macaulay duration of the entire portfolio falls within 3 to 6 months.

To give you a perspective, have a look at the portfolio of DSP's Ultra-short duration fund –

Debt holdings for Ultra Short Fund

> Money market instruments	95.4%
> Bonds & NCDs	28.28%
> TREPS	1.08%

The bulk of the ultra-short duration fund is invested in money market instruments; the maturity ranges anywhere between 1 day to 365 days. Mostly these are CPs belonging to various corporate entities, here is a snapshot of their money market portfolio –

Money market instruments			95.4%
Name	Rating	% of Net Assets	
EXPORT-IMPORT BANK OF INDIA	CRISIL A1+	1.0%	
KOTAK VISHWANIYA BANK LIMITED	CRISIL A1+	3.19%	
TATA HOUSING DEVELOPMENT COMPANY LIMITED	CRISIL A1+	3.19%	
AXIS BANK LIMITED	CRISIL A1+	3.17%	
KOTAK VISHWANIYA PRIME LTD	CRISIL A1+	3.17%	
AXIS BANK LIMITED	CRISIL A1+	2.07%	
HOUSING DEVELOPMENT FINANCE CORPORATION LIMITED	CRISIL A1+	2.00%	
NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT	CRISIL A1+	2.00%	

They also hold NCDs and Bonds (NCDs and bonds are the same), which have a maturity of at least a year –

Bonds & NCDs			28.28%
Name	Rating	% of Net Assets	
POWER FINANCE CORPORATION LIMITED	CRISIL AAA	5.31%	
REC LIMITED	CRISIL AAA	3.78%	
POWER FINANCE CORPORATION LIMITED	CRISIL AAA	3.84%	
LIC HOUSING FINANCE LIMITED	CRISIL AAA	2.84%	
REC LIMITED	CRISIL AAA	1.88%	
REC LIMITED	CRISIL AAA	1.84%	
MUTHOOT FINANCE LIMITED	CRISIL AA	1.82%	
HOUSING DEVELOPMENT FINANCE CORPORATION LIMITED	CRISIL AAA	1.34%	
POWER FINANCE CORPORATION LIMITED	CRISIL AAA	1.82%	

The job of the fund manager is to ensure that they not only manage the returns but also manage the Macaulay duration of the entire portfolio such that they adhere to the SEBI specified norm.

There is another interesting point to note here – while the ratings of CPs kind of vary for the money market instruments, they are all triple-A for Bonds and NCDs. Triple AAA ratings imply that the probability of default is lower.

As the maturity of the bond increases, the bond manager is more worried about possible default in the bond. Hence, they tend to stick AAA rate bonds.

However, this leads us to a critical point concerning ultra-short duration funds – they are not risk-free. These funds too, have the risk of credit default and rating downgrade.

Given this, who should invest in an ultra-short duration fund?

I think that this is a good fund for anyone looking to park money for 1-2 years, plus they are ok to take a wee bit of risk on the parked capital. If you can make peace with the fact that on the downside your money can go down by a few percentage points, then go ahead and park your funds in this ultra short term funds.

If you are looking at parking money for lesser than a year, stick to a liquid fund instead.

On the return side, I think it is reasonable to expect a return close to the bank's fixed deposit.

12.3 – Franklin and Vodafone saga

Since we are talking about Ultra-short duration bonds, I guess it makes sense to quickly discuss the Franklin – Vodafone drama that unfolded earlier this year.

Franklin India had invested in Vodafone India Limited (VIL)'s debt papers across six different debt schemes, including its Ultra short-duration bond fund.

In Oct 2019, the Supreme Court of India passed a judgement in favour of the Dept of Telecom (DoT), in a case against DoT and the telecom operators. As a result of the Supreme Court's judgement, the operators were asked to pay the licence fee and the spectrum usage charge based on the Adjusted Gross Revenue (AGR).

If you are not familiar with this, then I'd suggest you read this short note from the good folks at Finshots, they have done a great job at explaining the AGR episode

–<https://finshots.in/archive/the-final-verdict-on-agr-2/>

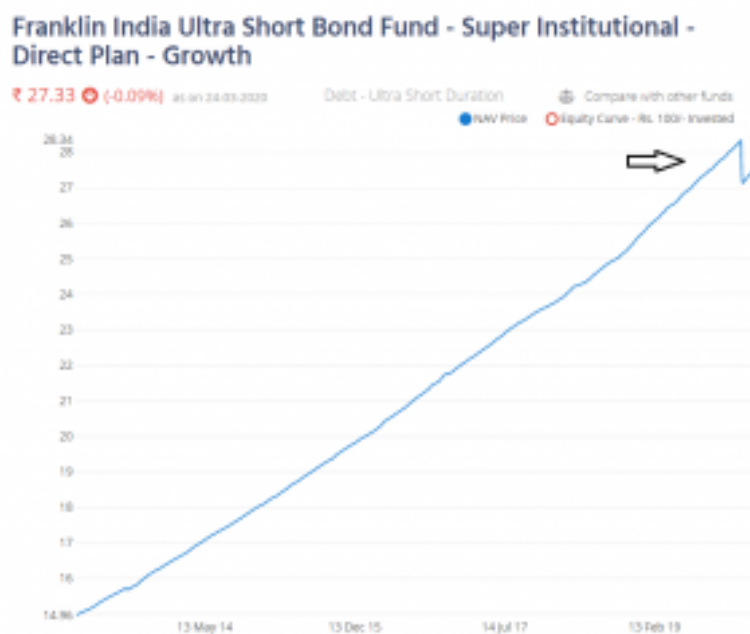
Anyway, to cut a long story short, post this judgement, VIL was now expected to Rs.27,000 Crs to DoT towards unpaid dues.

This means VIL would be cash squeezed; hence they are likely to default on their debt obligations.

As a smart money manager, after all, sorts of ramifications of this judgement, Franklin India took a proactive step, and they themselves internally downgraded the VIL's papers to junk status and wrote off that investment.

To give you a perspective, Franklin India's Ultra-short bond fund had 4.2% of its portfolio invested in VIL's paper. Now, what do you think happens when you 4.2% of your portfolio is rendered useless?

Obviously, the NAV of the fund falls. Check this –



In my view, Franklin may take at least a year or year and a half to get back to the previous NAV levels. The only reason I'm discussing the Franklin and Vodafone issue is to make you understand that debt funds too are risky, invest in them only after you fully understand the risk involved.

I'll stop this chapter at this stage. Before I wrap this up, I'd like to give you a quick insight into the direction we are heading with this module.

So far, we have discussed Equity mutual and few debt funds. The discussion is restricted mainly to a brief introduction to these funds and what happens within these funds. In the next chapter, we will continue this and introduce a few other debt funds and probably wind up the introduction bit.

Once we are through with that, we will start with the fund analysis bit and figure how to select mutual funds, both debt and equity and slowly steer our way in building a goal-based mutual fund portfolio.

So, we have a long way to go. Stay tuned and stay safe!

Key takeaways from this chapter

- Overnight funds invest in debt instruments with a 24hr settlement cycle
- Almost all overnight funds invest in Tri party repo
- The performance across overnight funds is similar
- Macaulay Duration of a fund gives us a sense of how long it takes for the fund to get back its invested amount
- Ultra-short duration fund has a Macaulay duration between 3 to 6 months
- Ultrashort duration funds are also risky

CHAPTER 13

The Debt Funds (Part 3)

13.1 – Debt jargons

As we enter the 27th day of the nationwide lockdown, I hope you and your loved ones are staying home, staying safe. The number of COVID19 cases in India has crossed 17,000 with Maharashtra topping the charts with over 3,500 cases. I hope all of this ends soon and we can all get back to our normal lives, until then the only mantra is ‘social distancing’, I hope you are following this diligently.

I think many people across the country are using the lockdown opportunity to learn something new and educated themselves. The traffic on Varsity has shot up quite a bit, here is the pageview snapshot from Google Analytics –



Along with the pageview, the number of queries pouring in has also shot up. We spend several hours every day to answer your questions.



So if you find the new chapter update a bit slow, then please do understand its because of the increased load 😊

In the previous chapter, we introduced a term called ‘Macaulay Duration’. If you recollect, Macaulay duration measure in years, the time required for the bondholder to recover the price paid for the bond by the bond’s cash flow. We did not discuss the math behind Macaulay duration because that’s outside the scope, but as I hinted in the previous chapter, the next module is on fixed income security (mini-series) where I’ll try and take this up in detail.

However, while we cruise along, there are few bond relationships that you need to know –

The yield of a bond and the price of the bond are inversely proportional. If the price of the bond increases, the yield of the bond decreases and vice versa

Interest rates and bond price are inversely proportional. If the interest rates increase, the bond price reduces and vice versa.

While we are at it, let me introduce another term – ‘ Modified Duration’, of the bond.

The modified duration (measured in years) of a bond is essentially the sensitivity of the bond’s price to the change in interest rate. So if a bond has a modified duration of 3.2 years, then –

A 1% increase in interest rate decreases the bond’s price by 3.2%. A 1.5% increase in the interest rate, lower the bond’s price by 4.8%

A 1% decrease in interest rate increases the bond’s price by 3.2%. A 1.5% decrease in bond price, increases the bond’s price by 4.8%

We can generalize this – Higher duration funds have a higher sensitivity to interest rate changes. So a 1% change in interest rate reduced the price of a longer duration fund in a greater magnitude compared to a low duration fund and vice versa.

In the context of a mutual debt fund, the modified duration is at an aggregate portfolio level. In the example above, say for a 1.5% increase in the interest rate, the debt fund’s NAV is likely to decrease by 4.8%. I hope you get the drift.

As a debt mutual fund investor, you are in the right spot if you are aware of the few points we have discussed so far. Along with these few points, as a bondholder or a debt mutual fund holder, you need to be aware that the mutual fund you are holding is susceptible to –

Credit risk – The risk that the bond held by the debt fund can get downgraded

Default risk – The risk that the bond issuer defaults on a coupon or principal repayment

Of course, now you also know that the bond price has an interest rate risk, but at this point, let us just assume the fund manager can hedge the interest rate risk.

Anyway, we will get back to the good old debt mutual funds. In this chapter, we will continue our discussion and take a few more debt (sub) categories. We will start the conversation with the low duration, money market, and short-duration funds.

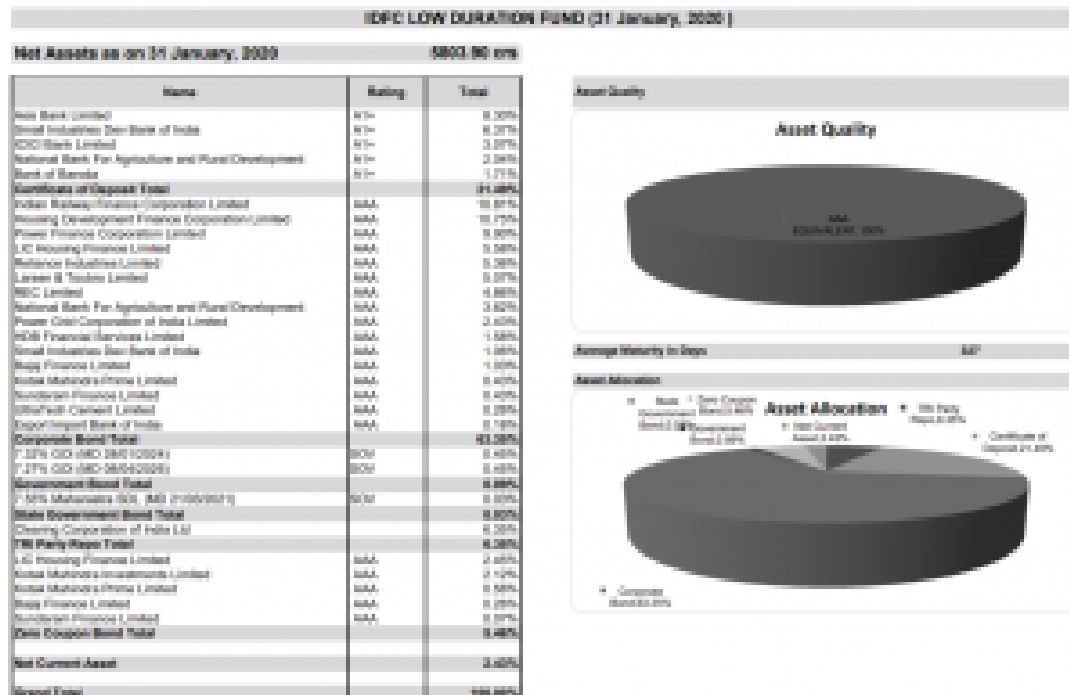
13.2 – Low duration and Money Market

We looked at the ultra-short duration bond fund in the previous chapter. The defining criterion for the ultra-short duration fund was the Macaulay duration of the portfolio. As per SEBI's classification, at the aggregate portfolio level, the Macaulay duration of the ultra short term duration fund has to vary between three to six months.

Next up is the low duration fund. The low duration fund is just like the ultra-short duration, only that the low duration fund, the Macaulay duration at the aggregate portfolio level varies between six to twelve months.

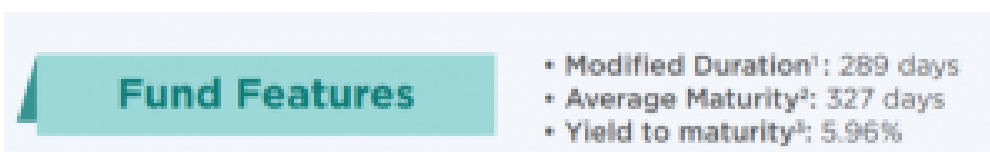
The credit risk of the low duration fund is similar to the ultra-short duration fund. Hence it is imperative for the investors to glance through the asset quality (paper quality) of the fund.

Have a look at the portfolio of the IDFC AMC's low duration fund –



As you can see, IDFC has 100% of its portfolio invested across various AAA papers. However, just because the fund has only AAA papers, does not imply zero credit risk. Remember, we discussed the Vodafone case in the previous chapter.

While the credit risk exists, the interest rate risk for the low duration fund is low. Have a look at the modified duration of IDFC's Low duration fund (published in the fund's factsheet) –



The modified duration is 289 days. I can convert this to years by dividing this by 360 –

$$= 289/360$$

zerodha.com/varsity

= 0.802

This means to say for every 1% increase or decrease in the interest rate, and the NAV is likely to decrease/increase by 0.802%, which as you can imagine is not much.

By the way, not all funds report modified duration in terms of the number of days. Modified duration is expressed in terms of years.

For example, the Nippon India Low Duration fund expresses the modified duration in years, which is 0.94 yrs.

Nippon India Low Duration Fund

Low Duration Fund

Details as on March 31, 2020

Type of Scheme

An open ended low duration debt scheme investing in debt and money market instruments such that the Macaulay duration of the portfolio is between 0.5 - 0.7 months. (Please refer to the page number 13 of the Scheme Information Document for details about concept of Macaulay's Duration for more information)

Current Investment Philosophy

The fund invests to invest 70 - 80% in higher rated (AAA &+) assets. A major part of the portfolio gets allocated to 0 - 9 months and 10 - 18% allocation is made in assets of 10 - 18 months maturity bucket, which aims to give the portfolio carry advantage and still stays secure. The portfolio duration would be maintained to be maintained between 0.5 - 0.70 yrs.

Key of Attraction

March 31, 2021

Fund Manager

Deep Chakravarti
 Head (Debt) since 1st Feb, 2020

Benchmark

NIFTY Low Duration Debt Index

Fund Size

Monthly Average: ₹ 6,124.38 Cr
 Month End: ₹ 4,287.79 Cr

NAV as on March 31, 2020

Dividend Plan	₹ 1,214.7994
Standard Plan	₹ 1,268.4913
Daily Dividend Plan	₹ 1,267.5000
Weekly Dividend Plan	₹ 1,267.5000
Quarterly Dividend Plan	₹ 1,266.5871
Reverse System	₹ 1,268.5814
Divid - Dividend Plan	₹ 1,268.2626
Divid - Daily Dividend Plan	₹ 1,267.5000
Divid - Weekly Dividend Plan	₹ 1,267.5000
Divid - Monthly Dividend Plan	₹ 1,267.5887
Divid - Quarterly Dividend Plan	₹ 1,266.5817
Divid - Reverse System	₹ 1,268.2987
Divid - Growth Plan	₹ 1,268.8818
Divid - Daily Dividend Plan	₹ 1,267.5000
Divid - Weekly Dividend Plan	₹ 1,267.5000
Divid - Monthly Dividend Plan	₹ 1,267.5773
Divid - Reverse System	₹ 1,268.7135

Average Maturity 1.19 Years
Modified Duration 0.94 Year
Yield to Maturity 5.80%

Portfolio as on March 31, 2020

Company Name	Rating	% of Assets
South India Infrastructure	AAA	0.80
Axis Bank Limited	CRISIL AA+	1.50
Industrial Bank Limited	CRISIL AA+	1.25
National Bank for Agriculture and Rural Development	CRISIL AA+	1.25
Commercial Paper		18.62
Finance Corporation Limited	CRISIL AA+	1.24
Nature Indusies Limited	CRISIL AA+	1.24
Finance Corporation Limited	CRISIL AA+	1.25
Financing Development Finance Corporation Limited	CRISIL AA+	1.25
Infrastructure Investment and Finance Company Limited	CRISIL AA+	1.25
Corporate Bond		68.80
Finance Trust - United Overseas Bank (UOB)	CRISIL AAA	1.12
India Bond Trust (IFFI Trust)	CRISIL AAA	1.27
Infrastructure Trust	CRISIL AAA	1.17
Nippon India Infrastructure Finance Limited	CRISIL AAA	1.27
NIP Housing Finance Limited	CRISIL AA	1.21
U.P. Power Corporation Limited	CRISIL AAA	1.24
L. & P. Housing Finance	CRISIL AAA	1.24
Financing Development Finance Corporation Limited	CRISIL AAA	1.24
Finance Trust - United	CRISIL AA	1.21
Infrastructure Investment Finance Limited	CRISIL AAA	1.25
IFFI Limited	CRISIL AAA	1.25

Rating Profile

Investment Grade & Overweight 76.21%
 Average: 1.25%

Asset Allocation

Corporate Bond 68.80%
 Fixed Income 1.25%
 Cash 1.25%
 Other 1.25%

Dividend History

Record Date	Rate (₹)	Dividend (₹)	In Dividend (₹)
Standard Plan			
10-Sep-14	07.8875	1076.4100	1074.8902
Divid - Standard Plan			
10-Sep-14	01.1000	1000.0000	1000.0000
Monthly Dividend Plan			
10-Feb-20	0.2100	1000.0000	1000.0000
10-Jun-20	0.2100	1000.0000	1000.0000
10-Dec-19	0.2100	1000.0000	1000.0000
Divid - Monthly Dividend Plan			
10-Feb-20	0.4200	1000.0000	1000.0000
10-Jun-20	0.4200	1000.0000	1000.0000
10-Dec-19	0.4200	1000.0000	1000.0000
Divid - Quarterly Dividend Plan			
10-Mar-20	0.4200	1000.0000	1000.0000
10-Jun-20	0.4200	1000.0000	1000.0000
10-Sep-19	0.4200	1000.0000	1000.0000
Divid - Weekly Dividend Plan			
10-Mar-20	0.2100	1000.0000	1000.0000
10-Jun-20	0.2100	1000.0000	1000.0000
10-Sep-19	0.2100	1000.0000	1000.0000
Reverse System			
10-Feb-14	10.00		
10-Jun-14	0.00		

So when the fund expresses in years, you need not divide by 360. Instead, you can use the number directly.

While we are at it, which of the two low duration funds do you think is risky in terms of modified duration?

IDFC's Low duration Fund with a modified duration of 0.802 or Nippon India's low duration fund with a modified duration of 0.94?

Here is a task for you – why do you think Nippon India's low duration fund has a higher modified duration? Can you look into their portfolio (as of April 2020) and get your answer?

If you can answer these questions with ease, then we are headed on the right track 😊

Lastly, who should look at investing in a low duration fund? This is best suited under situations where you want to park your money for a short duration and utilize the funds towards a specific goal at a later point.

Next up is the money market fund.

The money market fund is somewhat similar to the low duration fund. Here is SEBI's classification of the money market fund –

5	Money Market Fund	Investment in Money Market instruments having maturity upto 1 year	An open ended debt scheme investing in money market instruments
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As you can see, the maturity is capped to one year, similar to that of low duration fund; the only difference is in terms of the portfolio constituents.

A low duration fund can invest in both money market instruments and bonds but ensure at the aggregate portfolio level the duration is between 6-12 months. The money market fund, however, can invest only in money market instruments. The money market instruments usually consist –

‘Commercial Papers’ or CPs, issued by companies. CPs are unsecured

‘Certificate of Deposits’ or CDs. Banks issue CDs to entities depositing money

T-Bills, issued by the Government, carries a sovereign guarantee.

So just to summarize, the fund manager of a low duration fund can invest in CPs, CDs, and perhaps even in a bond with two years maturity. However, a money market fund manager can only invest in CDs and CPs.

Let me ask you two question –

What is the risk of investing in a money market fund?

What do you think will be the modified duration of a money market fund? Will it be 1, greater than one or less than 1.

Do pause here, think about it, try to answer yourself.

Have a look at the factsheet of UTI’s Money market fund –

Money Market Fund
 (Maturity up to 1 year)
UTI MONEY MARKET FUND

Investment Objective The investment objective of the scheme is to generate reasonable returns with high level of liquidity by investing in a portfolio of money market instruments. However, there can be no assurance that the investment objective of the scheme will be achieved. The scheme does not guarantee (including any returns).				
Date of inception/withdrawal 21st April, 2007	Fund Manager Mr. Anand S. Chopra (B.Sc., MBA (FIM/US&I)) Deputy Manager Mr. Anil Sharma (B.Com., CA, FIM)			
Fund's monthly average ₹ 1,305.23 Crore Closing AUM: ₹ 10,011.93 Crore	No. of Unit-Holding Accounts : 18,074 Weighted Average Maturity : 128 Days Yield to Maturity : 1.81% Modified Duration : 0.52 yrs			
Net asset value as on February 29, 2008 Growth : ₹ 2048.54	Total expense ratio (%) (Direct) : 0.37, (Regular) : 0.37 Local Exposure India : 100.00%			
High/Low of NAV in the month Growth : Option : ₹ 2048.54, ₹ 1219.85	Minimum Investment Amount Minimum amount of initial investment ₹ 10,000* and multiples of ₹ 1 Lacs thereafter till the Plan.			
Fund Performance Vs Benchmarks (CAGR)				
Fund Performance Vs Benchmark: CAGR(A) In 2007/2008				
	Growth of ₹ 10,000			
Period	NAV	CRISIL Money Market Index	CRISIL 1 Year T-Bill Index	NAV
	(₹)	(₹)	(₹)	(₹)
1 Year	1.88	1.75	1.76	16,788
2 Years	1.48	1.35	1.37	11,493
3 Years	1.08	1.08	1.07	8,433
Since Inception*	1.87	1.71	1.47	15,488
* Since inception till 29th February 2008. The performance of the fund is not comparable with the benchmark since 29th February 2008.				
* Compounded annualized growth rate.				
* Performance of other schemes managed by the fund manager is not comparable with the performance of the fund.				
* All figures given are provisional and un-audited.				
* Top 10 scrips in the portfolio.				

You will find the answers for both the questions here.

The money market fund is exposed to credit risk. As you can see, 9.39% of the portfolio is invested in a single company's CP or CD. Of course, the company's paper enjoys a high rating, but I want you to remember the fact that these paper ratings can change. So yeah, credit risk exists in a money market fund.

As you may have guessed, the modified duration will be under one year for a money market fund, which implies that the interest rate risk for these funds is low.

Investment philosophy in the money market fund is similar to the low duration fund. In fact, many investors often choose between low duration and the money market fund.

13.3 – Short Duration and Medium Duration funds

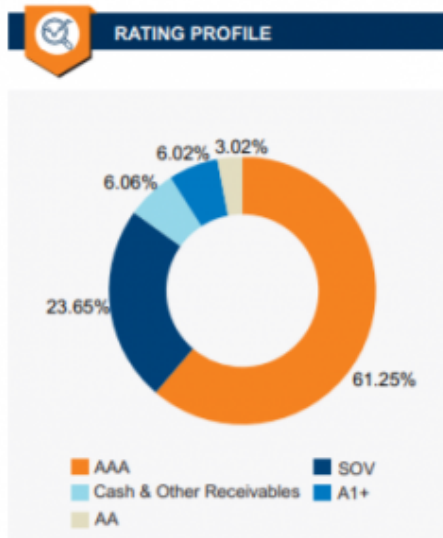
Next up is the short duration fund. Let's start straight with SEBI's definition –

8	Short Duration Fund	Investment in Debt & Money Market instruments such that the Macaulay duration of the portfolio is between 1 year – 3 years.	An open ended short term debt scheme investing in instruments with Macaulay duration between 1 year and 3 years (please refer to page no. __)
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The Macaulay's duration of the short duration fund has to range between 1 and 3 years. After reading the SEBI definition, what is the first thing that comes to your mind?

Well, I hope you think about it from a risk perspective. With an increase in the duration, the modified duration also increases – which means the risk associated with changes in interest rate is higher with a short duration fund (and the medium duration fund). Do note; this was not so much of a concern with the low duration and money market fund (or even the ultra-short duration fund).

Of course, credit risk continues for short duration fund as well. Have a look at the rating profile of the Mirae Asset Short Term Fund –



As you can see, the fund has a mix of AAA, AA and A1+ debt papers in the portfolio. For the same fund, look at the modified duration –

QUANTITATIVE DATA

Weighted Average Maturity	: 3.33 Years
Modified Duration	: 2.67 Years
Macaulay Duration	: 2.84 Years
Yield to Maturity	: 6.23%

The modified duration is 2.67 years, which means, for every 1% increase in the interest rate, the fund will drop 2.67% in its NAV. The risk associated with the short-term fund is higher compared to all the other funds we have discussed so far.

Also, do notice the Macaulay duration of the fund, it is below 3, as SEBI has defined.

With a considerable amount of risk, you need to be clear with your investment objective in these funds. Invest in these funds only if you have an

investment horizon of at least three years in perspective. Of course, with the increased risk, the return expectation is also higher. I think it is prudent to expect about 7 (ish) % return on these short-duration funds.

I think by now, you must have got the hang of how to understand the basics of debt fund.

Here is the SEBI's classification of a Medium duration fund –

8	Medium to Long Duration Fund	Investment in Debt & Money Market instruments such that the Macaulay duration of the portfolio is between 4 – 7 years	An open ended medium term debt scheme investing in instruments with Macaulay duration between 4 years and 7 years (please refer to page no. ___)
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As a task, why don't you do look upon a fact sheet belonging to a medium duration fund and answer these question –

How is the portfolio composition? What do they hold in the portfolio? How are the papers rated?

What do you think is the credit risk here?

What is the Macaulay duration? Does it match SEBI's mandate?

What is the modified duration? What do you think is the risk associated with the interest rate change?

What is your investment horizon if you were to invest in these funds?

I'm reasonably sure that you can carry out the above task with ease. If you find any difficulty of any sort, then please do leave a query at the end of this chapter and I'll be more than happy to help you with it.

In the next chapter, we will take up the Credit risk, dynamic bonds and the gilts. However, there is one last thing we need to discuss before we end this chapter.

13.4 – The Franklin India debt fund saga

On 23rd April 2020, Franklin Templeton (India) AMC made an announcement that shook the entire debt fund world.



Franklin Templeton Mutual Fund
 Indiabulls Finance Center, Tower 2, 12th and 13th Floor, Senapati Bapat Marg,
 Upperlaxmi Road (West), Mumbai - 400018

NOTICE is hereby given that Franklin Templeton Trustee Services Private Limited has decided to wind up following schemes of Franklin Templeton Mutual Fund pursuant to the provisions of regulation 30A(2)(a) of the SEBI Mutual Funds Regulations, 1996 (Mutual Fund Regulations):

- Franklin India Low Duration Fund (No. of Segregated Portfolios – 2)
- Franklin India Ultra Short Bond Fund (No. of Segregated Portfolios – 2)
- Franklin India Short Term Income Plan (No. of Segregated Portfolios – 2)
- Franklin India Credit Risk Fund (No. of Segregated Portfolios – 2)
- Franklin India Dynamic Accrual Fund (No. of Segregated Portfolios – 2)
- Franklin India Income Opportunities Fund (No. of Segregated Portfolios – 2)

There has been a dramatic and sustained fall in liquidity in certain segments of the corporate bonds market in account of the Covid-19 crisis and the resultant lock-down of the Indian economy which was necessary to address the same. At the same time, mutual funds, especially in the fixed income segment, are facing continuous and heightened redemptions.

The Trustees of Franklin Templeton Mutual Fund in India, after careful analysis and review of the recommendations submitted by Franklin Templeton Asset Management (India) Private Limited (the AMC), and in close consultation with the investment team, are of the considered opinion that an event has occurred, which requires these schemes to be wound up and that this is the only viable option to preserve value for unitholders and to enable an orderly and equitable exit for all members in these unprecedented circumstances.

Individual emails are being dispatched to the unitholders with respect to the above.

Pursuant to regulation 41.1.1 of the Mutual Fund Regulations, approval of the unitholders of the respective schemes will be sought separately.

We propose to seek such approval through electronic or other appropriate means as far as circumstances permit.

Pursuant to Regulation 40 of the SEBI Mutual Funds Regulations, 1996 as and from April 28, 2020 the Trustee and the AMC have:

- (i) ceased to carry on any business or fully in respect of the Schemes;
- (ii) ceased to create or cancel units in the Schemes;
- (iii) ceased to issue or redeem units in the Schemes.

The Trustee or the person authorized by it will continue to realize and / or dispose-off the assets of the Schemes in the best interest of the Unit holder(s). The main proceeds after discharge of all liabilities and expenses will be paid to the Unit holder(s) in proportion to their respective interests in the assets of Schemes.

It may be noted that a Unit holder whose name appears on the register of Unit holders at the close of business hours of April 28, 2020 shall be entitled to vote on the matter under regulation 41.1.1 as set forth above. If none of the Unitholder(s) participate, the Trustee or the person so authorized shall assume the authority to take steps for winding up of the Schemes. Members who have not registered their email id are requested to register their email id with us at the earliest.

For Franklin Templeton Trustee Services Private Limited
 (Trustee to Franklin Templeton Mutual Fund)

141-

Authorized Signatory

Date: April 23, 2020

In an unprecedented move, Franklin has decided to close six of its debt funds, which includes their low duration fund and ultra-short duration fund. The AUM across these six funds is roughly Rs.27,000 Crores.

The reason they cite is – because of the current economic situation, there is a surge in redemption, leading to a liquidity crunch within the AMC.

To put this in perspective, Franklin witnessed a surge in redemption to the extent of over Rs.9000 Crores in March 2020, which as you can imagine is one-third of the AUM across these funds.

Unfortunately, the secondary bond market in India is not liquid enough. It is not easy for the fund managers to quickly liquidate the bonds from their portfolio. For this reason, most of the bonds held to maturity. Of course, the AMC plans to have enough cash to meet daily redemptions, they do this in several ways, including a technique called laddering, wherein they have a blend of papers maturing in different timelines. The liquidity arrangements work when business functions as usual. But as we clearly understand now, things go helter-skelter when tables turn.

None of the AMCs would be (at least up until now) prepared for such a steep surge in redemption.

Hence to ease the situation, Franklin has decided to close down the schemes completely and lockdown the funds entirely, which implies that if you are an investor in these funds, then you cannot place a redemption request.

Please note, the AMC is not winding down the scheme because of the credit or interest rate risk. Folks at Franklin are outstanding in the debt fund game, and they have vast experience in this segment, but unfortunately, they are now threading on a different territory.

Therefore, dear readers, when investing in debt funds, along with the credit and interest rate risk, factor in a new risk – liquidity risk.

But of course, how do you quantify and apply liquidity risk in a real-life scenario? Well, I don't know that just yet. However, does this mean that you should completely stay away from debt funds?

No, not at all.

Debt funds play an essential role in asset allocation, and it should play its part in your portfolio. The COVID19 situation, if not for anything, has yet again highlighted the importance of asset allocation.

More on this as we cruise through this module!

Stay home, stay safe!

Key takeaways from this chapter

- Bond yields and bond prices are inversely proportional
- Interest rate and bond prices are inversely proportional
- Modified duration helps us understand the change in NAV of the fund (in the context of debt fund) for every 1% change in interest rate
- Low duration fund has credit risk, but low-interest rate risk
- Money market fund has credit risk, but low interest rate risk
- Short and medium duration fund has both credit and interest rate risk
- Debt investors have to factor in liquidity risk along with credit and interest rate risk

CHAPTER 14

The Debt Funds (Part 4)

14.1 – Liquidity Risk

In the previous chapter, we discussed the Franklin debt fund saga. Thanks to this episode, as investors, we now very clearly know that investing in debt fund should not be based on useless parameters such as the past returns or the current fund ranking. The market has taught us one two many times that this approach to fund selection is a pointless affair.

The evaluation must be based on risk metrics. Unless the investor develops a sense of all the risk involved while investing in a debt fund, he or she should not even venture into the debt fund arena. The same holds for equity funds as well. However, thanks to the tagline ‘Mutual funds are subjected to market risk’, investors somehow perceive market risk as a risk associated (only) with equity funds. Still, at least they are aware of the fact that equity funds are risky.

Unfortunately, the same set of people assume that the debt funds do not carry any risk.

If you have read the previous chapters, you know that debt funds are risky too, and you are even familiar with the risk types associated with debt funds, i.e. default risk, credit risk, and the interest rate risk. The recent Franklin episode formally introduced us to another dormant risk factor called the ‘Liquidity Risk’.



We will start this chapter with a quick discussion on liquidity risk and then proceed to learn the other categories (sub) of debt funds.

Liquidity risk, from the debt fund perspective, can mean two things –

- The lack of liquidity in the underlying market the debt funds invests in, i.e. the Indian bond markets.
- The lack of availability of funds with the AMCs to service investor's redemption

Both these are tightly related though.

The lack of liquidity in the bond market implies that the AMCs cannot quickly liquidate the papers they hold in the bond market, which means to say that they are obligated to keep the paper to maturity, which further implies that the money is kind of 'locked-in'.

Now the primary job of an AMC is to collect money from an investor, invest that money on their behalf, generate returns for the investors, and return the funds when the investor redeems the units.

To honour the investor's redemption, the AMC must hold enough cash across each of the schemes. If the AMC does not have enough funds, then they cannot service the redemption requests that come in, especially in case the redemption requests come in large numbers.

Think about it for a second – on the one hand; the AMC has invested in debt papers which it cannot sell as and when they wish (lack of liquidity in bonds market) and on the other hand, it has to maintain a cash pile to service redemptions. In the event redemption comes in large numbers, the lack of cash causes a liquidity crisis.

Franklin India faced this same situation. On a day to day basis, AMCs maintain enough cash to service redemptions, after all, redemptions are a regular affair for an AMCs.

However, if there is a surge in redemption, then the AMC will need extra cash to service the redemption. Question is where they will get this money?

You guessed it right, they borrow.

Under SEBI's guidelines, an AMC can borrow up to 20% of its net asset under management (AUM). You can read the detailed directions here –

Here is the extract on AMC's borrowing limits –

3.1.7 Borrowing Limits: MFs in India are not allowed to borrow for investment purpose. They can temporarily borrow to a limited extent i.e. 20 percent of the net assets of the scheme for a maximum period of 6 months, only to meet temporary liquidity requirement.

So, if an AMC is pulling this lever to borrow funds, then it probably indicates that the AMC's usual cash pile is depleting; hence they need to borrow more to service redemption request.

How do we get to know if the AMC is borrowing? Well, one needs to look at the monthly portfolio declaration that the AMC makes. If the cash component is positive, that means to say that the AMC is not borrowing funds, if it is negative, then that shows the presence of debt.

Take a look at Franklin's Ultra-short Term fund's portfolio from Jan 2020 –

Commercial Paper	Franklin India Infrastructure Debt Fund (Gilt)-D	100%	1,000,000	100%	1,000,000	100%
Corporate Debt	Franklin India Infrastructure Debt Fund (Gilt)-D	100%	1,000,000	100%	1,000,000	100%
Bank Term	Franklin India Infrastructure Debt Fund (Gilt)-D	100%	1,000,000	100%	1,000,000	100%
Financial Risk	Franklin India Infrastructure Debt Fund (Gilt)-D	100%	1,000,000	100%	1,000,000	100%
Other Assets	Franklin India Infrastructure Debt Fund (Gilt)-D	100%	1,000,000	100%	1,000,000	100%
Total			3,000,000,000		3,000,000,000	100.0%
Total Debt & Other Assets					97,450,000	27.8%
Net Assets					3,000,000,000	100.0%
Other Financial Storage						

Portfolio in Feb 2020 –

Commercial Paper	Franklin India Infrastructure Debt Fund (Gilt)-D	100%	1,000,000	100%	1,000,000	100%
Corporate Debt	Franklin India Infrastructure Debt Fund (Gilt)-D	100%	1,000,000	100%	1,000,000	100%
Bank Term	Franklin India Infrastructure Debt Fund (Gilt)-D	100%	1,000,000	100%	1,000,000	100%
Financial Risk	Franklin India Infrastructure Debt Fund (Gilt)-D	100%	1,000,000	100%	1,000,000	100%
Other Assets	Franklin India Infrastructure Debt Fund (Gilt)-D	100%	1,000,000	100%	1,000,000	100%
Total			3,000,000,000		3,000,000,000	100.0%
Total Debt & Other Assets					43,828,700	1.4%
Net Assets					3,000,000,000	100.0%
Other Financial Storage						

Portfolio in March 2020 –

- The individual portfolios consisted of papers below AA+; this was always questionable.
- Cash decreased, borrowings increased.
- The market itself was weak, thanks to COVID 19
- The street sentiment was negative.

When you connect these things, you'd somehow see trouble brewing. I understand it may not be straightforward for a regular investor (or for that matter even seasoned analysts), with more market experience the 'connect the dots' bit becomes more intuitive and the call will eventually come from your gut 😊

We will discuss more on this and other aspects of risk in the 'how to select mutual funds', chapter. We will now proceed to understand three different types of debt funds – Banking & PSU Debt Funds, Credit risk funds, and the Gilts.

14.2 – Banking and PSU Debt Fund

Ideally, I'd have stopped discussing debt funds right after the medium duration funds, because in my opinion, all the other types of debt funds are entirely pointless for a typical retail portfolio.

However, I think it is important to discuss other debt fund types to let you know what they are and what to expect.

Let us kick start this discussion with the Banking & PSU Debt Funds.

Before we proceed, think about this a bit and try to imagine what the ‘Banking and PSU debt Fund’, really means.

If you are someone like me, I’m sure you’d have thought that the Banking and PSU debt Fund, as the name suggests is a fund that invests in papers from the banking and PSU sector. The banking and PSU sector is as one of the safest in India.

Fair enough now let’s see what SEBI has to say –

13	Banking and PSU Fund	Minimum investment in Debt instruments of banks, Public Sector Undertakings, Public Financial Institutions- 80% of total assets	An open ended debt scheme predominantly investing in Debt instruments of banks, Public Sector Undertakings, Public Financial Institutions
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Well, it looks like we were almost right 😊

The fund invests in banking and PSU debt to the extent of 80%. Pay attention to the 80% part here!

The remaining 20% gets invested in any paper.


Suddenly what seemed like a harmless debt fund turns out tricky.

This is an 80-20 cocktail, and there is a problem with it. Think about this from a regular retail investor, when he reads the fund’s title; it is only natural for him to expect the fund to be 100% Banking and PSU debt, he would not expect the fund to have papers from the private sector.

If a default occurs in any of the paper from the 20% bucket, then the fund’s NAV takes a hit. Who is to blame here? The investor for expecting a pure-play Banking & PSU fund, the fund manager for lousy investment, or SEBI for permitting this cocktail?

Have a look at IDFC AMCs Banking & PSU Debt Fund –

Core Bucket



Portfolio

Name	Rating	% of NAV
Corporate Bond		90.22%
NABARD	AAA	11.7%
LIC Housing Finance	AAA	9.54%
Power Finance Corporation	AAA	8.50%
National Highways Auth of Ind	AAA	6.19%
Hindustan Petroleum Corporation	AAA	5.9%
National Housing Bank	AAA	5.86%
Axis Bank	AAA	5.86%
REC	AAA	4.97%
Small Industries Dev Bank of India	AAA	4.94%
Indian Railway Finance Corporation	AAA	4.72%
Export Import Bank of India	AAA	4.25%
Power Grid Corporation of India	AAA	3.22%
ICICI Bank	AAA	2.83%
Housing & Urban Development Corporation	AAA	2.28%
Bharat Petroleum Corporation	AAA	2.18%
HDFC	AAA	1.33%
NHPC	AAA	1.3%
Reliance Industries	AAA	1.27%
Kotak Mahindra Prime	AAA	1.14%
NTPC	AAA	1.03%
Bajaj Finance	AAA	1.02%

The portfolio consists of paper from Reliance Industries to the extent of 1.27%, not that Reliance is terrible, could be a fantastic paper to hold. Still, the question is, does it belong here?

Anyway, the good part of the Banking and PUS Debt fund is that the credit risk is kind of on the lower side, mainly for two reasons –

- RBI provides liquidity support to banks and NBFCs
- Implicit Sovereign guarantee by the Govt of India for PSUs

But remember, the ‘credit risk comfort’ is for 80% of the portfolio; the same is not valid for the balance of 20% of the portfolio.

Also, if you notice, SEBI has no specs on the Macaulay's duration of the portfolio, which means the fund manager is flexible with the duration of the papers held in the portfolio. Given this, the modified duration will be on the higher side for these funds.

Here are the parameters for the IDFC's Banking & PSU Debt fund –

Modified Duration ⓘ	2.59 years
Average Maturity	3.10 years

The average duration is about 3.1 years, which is in line with any mid duration fund. The modified duration is about 2.6, which for a debt fund is on the slightly higher end of the spectrum. If the interest rate goes up, the fund will take quite a bit of time to recover from the fallen NAV.

Given this, an investor looking at investing in these debt funds should have at least 3-5 years perspective while investing in the Banking & PSU Debt fund.

At this point, I think it is important to remind the readers that so far in this module, we are only introducing different types of fund. We have made few passing comments on some of these categories, but we still haven't figured how and why one should invest if at all one has to.

At a later point in this module, we will try and figure two significant bits –

- How to analyse a Mutual Fund?
- How to build an MF portfolio?

When we do this discussion, we will tie all loose ends and develop a holistic approach to personal finance.

14.3 – Credit Risk Funds

Before October 2017 (before SEBI's huge MF reclassification circular), Credit Risk Funds were called 'Credit Opportunities Fund'.

Do you notice the change in perception here?

Credit Opportunity Fund – the emphasis is on the opportunity, returns, and generally has a positive feel to it, hence easier to sell 😊

Credit Risk Fund – It's the same fund, but by highlighting the term risk, the emphasis is on the risk, and rightly so.

Anyway, the name 'Credit risk fund', should give you a heads up on what to expect in this fund 😊

Yes, you guessed it right, the fund is loaded with Credit Risk!

As usual, let us start with SEBI's definition –

12	Credit Risk Fund ^A	Minimum investment in corporate bonds- 65% of total assets (investment in below highest rated instruments)	An open ended debt scheme investing in below highest rated corporate bonds
----	-------------------------------	--	--

And if you are wondering what the little circumflex next to the name points to

–

^A Words/ phrases that highlight/ emphasize only the return aspect of the scheme shall not be used in the name of the scheme (for instance Credit Opportunities Fund, High Yield Fund, Credit Advantage etc.)

SEBI here simply specifies that an AMC running a credit risk fund should invest 65% of the assets in corporate bonds, which are 'below are below the investment grade, which means –

- These bonds carry maximum credit risk, hence the probability of both, default by the bond issuer and credit downgrade is very high
- No spec on where the balance 35% gets invested

The Credit risk fund is where the fund managers cut themselves to chase yields. Think of it like a hungry kid at a buffet dinner party. The plate will be loaded, with zero control on what gets packed in the plate.

Similarly, a fund manager running a credit risk fund loads up the portfolio with risky papers to chase yields. Let me explain this.

The objective of a credit risk fund is to take on as much credit risk as possible to ensure a higher yield to the investors. What does this mean?

This means the fund will lend the investor's funds to corporates whose repayment track record or repayment capability is questionable. Why would the fund manager deliberately lend to a corporate who is unlikely to repay?

He does so because the corporates in need of the fund say, 'give me the money, and I'll compensate you with higher interest rates'.

You see the point, right? Corporate with bad credit history has to entice new lender by paying a higher coupon rate.

The debt papers of such corporates usually have a lower rating. When the fund manager lends to such entities, he hopes for the following –

- The borrowing entity will repay and honour the interest paid regularly.
- He also hopes the corporate entity improves its creditworthiness.

- If the creditworthiness improves, then the rating of the bond/paper will improve.
- If the ratings improve, the bond price goes up, hence the NAV increases

If these things were to happen, not only will the fund manager get higher interest rates for the money he has lent, but will benefit from the credit rating upgrade and the eventual increase in bond prices.

Let us look at a portfolio of a Credit Risk Fund; this belongs to DSP's Credit Risk fund –

Debt holdings for Credit Risk Fund

* Bonds & NCDs			58.10%
Name	Rating	% of Net Assets	
NIPONIA ENERGY LTD	CARE AA	30.49%	
ICSI INDIA FINANCIAL SERVICES LTD	CRISIL AA	4.0%	
ICSI INDIA FINANCIAL SERVICES LTD	CRISIL AA	4.0%	
EOL FINANCE LTD	KIRAAA	4.34%	
ICSI INDIA FINANCIAL SERVICES LTD	CRISIL AA	3.79%	
ICSI INDIA FINANCIAL SERVICES LTD	CRISIL AA	3.08%	
EXPORT-IMPORT BANK OF INDIA	CRISIL AA+	1.04%	
SINTEX-BAPL LTD	BBB-D	1.42%	
SINTEX-BAPL LTD	BBB-D	1.42%	
SINTEX-BAPL LTD	BBB-D	1.42%	
TATA MOTORS LTD	CARE AA	0.08%	
SHANTILINTEL LTD	CRISIL AA	0.02%	

The fund manager here has decided to allocate nearly 30% of its assets to just one company. You can imagine the hit on the NAV of this fund if this company were to default on its obligation.

The credit ratings of the other companies are not excellent either; well, this is expected from a credit risk fund. Still, the combination of concentrated positions coupled with lousy credit ratings makes this a hazardous category to invest.

The credit risk fund is a complicated category to understand, but the good part is that a retail investor does not need to endure this pain.

Almost all portfolio goals of a retail investor can be achieved without GILTS in the portfolio. So do avoid investing your money in a credit risk fund.

14.4 – GILT Funds

Back in the early 19th Century, when the Government would borrow money, they would do so by issuing a bond (a physical paper), on which the terms of the borrowing were written and signed. The edges of such a bond were laced in Gold, to showcase the sanctity of Government borrowing. Such bonds issued by the Government were called the ‘Gilt-edged bonds’, because of golden edges.

The presence of Gold does not eliminate the credit or interest rate risk, at the end of the day, this technically is still a bond 😊

However, the fact that the borrower is the Government implies that there is virtually zero Credit risk, because, well, the Government cannot default on debt obligations.

The legacy continues, and even today, the bonds issued by the Government is called a GILT, there is no gold lacing today, but the Sovereign Guarantee still exists.

Now, as you can imagine, a mutual fund that invests predominantly in Government bonds or Gilts is called a ‘Gilt Fund’.

Here is SEBI’s definition of a GILT fund –

14	Gilt Fund	Minimum investment in Gsecs- 80% of total assets (across maturity)	An open ended debt scheme investing in government securities across maturity
15	Gilt Fund with 10 year constant duration	Minimum investment in Gsecs- 80% of total assets such that the Macaulay duration of the portfolio is equal to 10 years	An open ended debt scheme investing in government securities having a constant maturity of 10 years

There are two types of GILT funds –

- Gilt funds – Invests a minimum of 80% of its assets in Government securities. This implies 20% can go anywhere (again the cocktail problem)
- Gilt with ten-year constant duration – This fund is the same as above with the added clause that the Macaulay’s duration is at least ten years. By defining the duration, the entire risk profile of this fund changes.

Agreed, there is no Credit risk for the investor here. We expect the Government never to default. But think about the interest rate risk in these funds, especially the constant duration one. As you can imagine the interest rate risk is quite significant in these funds, probably large enough to compensate for the absence of credit risk.

I would urge you to look into the fact sheet of any GILT fund and observe the duration and modified duration to get a sense of how risky these funds are.

If you ever decide to invest in these funds, then do so only with a long, really long term perspective. I’m talking about 8-10 year time frame here.

I really don’t see a need for a GILT fund in any retail portfolio; you are better without this.

Anyway, with this, we will wrap up our discussion on debt funds. Up next is ETFs and Index funds.

Key takeaways from this chapter

- A debt fund investor should watch out for liquidity risk
- The cash borrowings of a fund is an indicator of liquidity risk
- The Banking and PSU debt funds invest predominantly in banking/financial services, and PSU debt
- The banking and PSU debt carries less credit risk (relatively) compared to its peers
- Credit risk fund carries a high degree of credit risk. A retail investor is better off avoiding this fund
- GILTS don't have credit risk but have a significant amount of interest rate risk

CHAPTER 15

Investing in Bonds

15.1 – Context

I understand we concluded the previous chapter by hinting that we would discuss Index funds next. However, I'm taking a bit of a detour to introduce how one can invest in Bonds directly.

Why am I doing this now? Well, that is because we have just discussed debt funds and the associated terms, given the similarity between debt funds and bonds, I thought we could extend that discussion and talk about bonds as well.

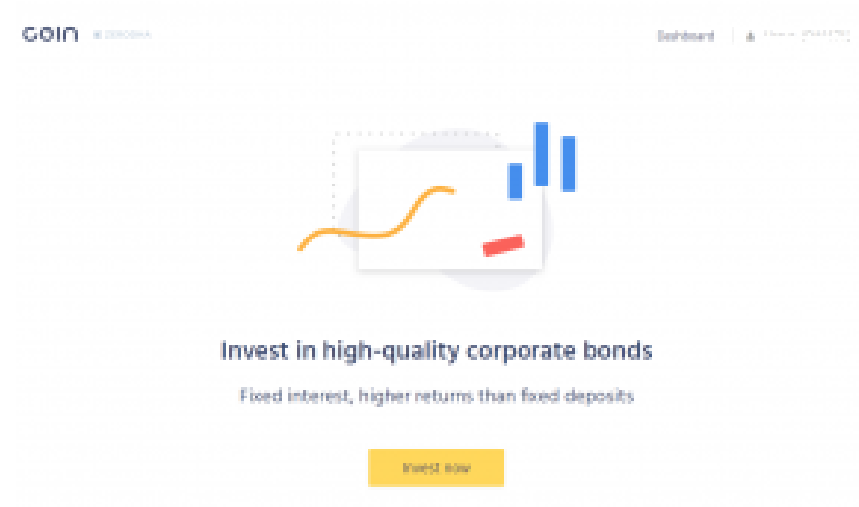
Besides, Zerodha's bond investing platform is up and ready for you to use, so this chapter will help you understand how to use the platform as well.



Remember, when you invest in any sort of debt mutual fund, you primarily invest in a mutual fund whose fund manager invests your funds in various bonds and bills. Using Zerodha's platform, you can now directly invest in the bonds, just like the fund manager would.

15.2 – The bonds platform

The bonds platform on Zerodha is a part of Coin, our mutual fund platform.



On the landing page, you can see that we are talking about high-quality PSU and Corporate Bonds. High quality here means the highest credit ratings.

At any given point, the platform lists all the available bonds for you to invest.

As of today, these are the bonds available to you –

Available bonds

Bond name	Tenure	Price/unit	YTM	Coupon	Frequency	Taxable	
REC Limited <small>(PSU Tax Free) (AAA CRISIL)</small>	41 months	1,115.00	5.40%	5.07%	Yearly	No	Invest
Housing & Urban Development Corporation Ltd <small>(PSU Tax Free) (AAA CRISIL)</small>	22 months	1,064.77	5.21%	5.10%	Yearly	No	Invest
Power Finance Corporation <small>(PSU Tax Free) (AAA CRISIL)</small>	32 months	1,064.79	5.55%	7.19%	Yearly	No	Invest
National Highway Authority of India <small>(PSU Tax Free) (AAA CRISIL)</small>	130 months	1,157.76	5.47%	7.09%	Yearly	No	Invest

For example, the very first is a bond from Rural Electrification Corporation Limited (REC).

Available bonds

Bond name

REC Limited

PSU Tax Free

AAA CRISIL

There are two tags below the company's name; these tags give you vital information on the bonds.

- **PSU Tax-free** – Remember, PSUs carry an implicit Sovereign guarantee; hence the credit risk in these PSU bonds is very low. The tax-free bit indicates that the interest income received from these bonds is 100% tax-exempt. The tax-free bit makes these bonds extremely attractive for the investors. However, the tax-free is applicable only for the interest income. If you hold the bond till maturity, there will be no taxation on

your interest earnings from this bond. However, if you manage to sell this bond before maturity at a price more than what you had purchased, then you get capital gains which are taxable.

- **Credit Rating** – REC Limited’s bond is rated triple-A (AAA) by CRISIL; the rating is an indication of the creditworthiness of the borrower. AAA is the highest-ranking, so one need not worry about the creditworthiness of the borrower, i.e. REC in this case.

Apart from these tags, there are other specs available to you. Some of these are easy and intuitive, while the others are not.

Bond name	tenure	Price/unit	YTM	Coupon	Frequency	Taxable
REC Limited <small>REC Limited</small> <small>AAA (CRISIL)</small>	41 months	1,115.00	5.40%	8.00%	Yearly	No View

On the platform, you can see a summarized view of the most important parameters for you to consider before investing. A typical investor does not need any more information apart from what’s listed above.

However, for the sake of this chapter and its completeness, let’s dig into more details of this particular REC bond. The ISIN of this bond is INE020B07H01, key in the ISIN here and you’ll get all the other information related to this bond.

I’ve highlighted the most significant bits here –

equity, lie other stakeholders like the unsecured debt, convertible bonds, non-convertible debt etc. In case of liquidation of the company (worst case scenario), the senior debt holders are the first ones to be paid off from the liquidation amount of the company. This significantly enhances the safety of capital for senior debt holders.

So the moment you see secured senior debt, be assured that the credit risk associated is relatively very low.

The section after this is quite self-explanatory, talks about the date of issue. Think about this as the company's IPO date or an NFO debuting in the MF market.

REC paper was issued in 2013, maturing in 2023, making this a 10-year bond.

Now move your attention to the details mentioned on the right — the topmost section details out a few essential parameters.

Firstly, the face value, which is Rs.1000/-. The face value of a bond is essential for three reasons –

1. Gives you a sense of the premium or discount the bond is trading to its face value. In the case of REC (refer to the snapshot from COIN), the current price for this bond is Rs.1115.03/-, which is at a premium to face value.
2. The coupon is paid as a percentage of the face value. The coupon for this bond is 8.01%, which means that every bond you hold gives you Rs.80.01/- as interest income until it matures.
3. Upon maturity, the redemption value depends on the bond's face value. More on this later.

The next section highlights the interest payment details. As highlighted, the REC bond pays the interest on 1st Dec every year, till the bond matures. The company pays out interest annually. Some bonds pay interest semiannually, quarterly, and some even pay monthly.

You can also see the maturity date, which is 24th September 2023.

Now that you know these details, I'd suggest you re-look at the COIN snapshot. Everything mentioned in the snapshot should be clear, except for the YTM.

15.3 – Yield to Maturity

The concept of 'Yield to Maturity' or YTM is one of the most important concepts to understand when dealing with bonds. While the bond's coupon is essential, as an investor in bonds, you need to be more concerned about the YTM than the coupon itself.

I think the concept of YTM is best understood if we look at it from transactions we are familiar with. Given this, let us build a hypothetical situation around this.

Scenario 1

Your friend informs you about a fantastic commercial property, capable of giving you a 20% rental yield on the investment.

Rental yield = Total rent collected in the year / Amount invested in the property.

You get all excited, because, from your research, the average commercial rental yield is about 15%, so the deal your friend proposed stands out. You ask your friend for more information.

He tells that the fair price for the commercial property is 3 Crores. You do not bat an eyelid; you pay 3 Crore cash down and buy the property.

From the next month, you start receiving a rent of Rs.500,000/- into your account.

Twelve months pass by, and rental income is flowing smoothly.

However, at the end of 12 months, you have a premonition that a virus will hit the world, people will start working from home, and therefore the commercial real estate will lose its sheen.

You decide to sell the property and cash out. Assume the property market stayed flat; hence, you get to sell the property at cost, i.e. 3 Crore.

The question is, how much did you make on this entire transaction? In other words, what was your Net Yield? For the sake of simplicity, forget about taxes and charges.

This is a straightforward calculation –

Buy Price = 3 Crore

Sell Price = 3 Crore

P&L on Property = 0 ——— (1)

Rental per month = Rs.500,000/-

Number of months rent collected = 12

Total Rental income = $12 * 500,000 = \text{Rs.}60,00,000/-$ ----- (2)

Net P&L = (1) + (2)

= Rs.60,00,000/-

Net Yield = Net P&L / Buy price

= 60 Lakh / 3 Crore

= 20%

The net yield equals the rental yield.

Scenario 2

Everything remains the same, except that at the time of buying, instead of 3 Crore, you bought the property at 3.3 Crore. What is the net yield?

Buy Price = 3.3 Crore

Sell Price = 3 Crore

P&L on Property = A loss of 30 Lakh ----- (1)

Rental per month = Rs.500,000/-

Number of months rent collected = 12

Total Rental income = $12 * 500,000 = \text{Rs.}60,00,000/-$ ----- (2)

Net P&L = (1) + (2)

= Rs.30,00,000/-

Net Yield = Net P&L / Buy price

= 30 Lakh / 3.3 Crore

= 9.09%

Notice, everything remained the same, except for the buy price. However, this had a big impact on the net yield.

Scenario 3

Everything remains the same, except that at the time of buying, instead of 3 Crore, you bought the property at 2.9 Crore. What is the net yield?

Buy Price = 2.9 Crore

Sell Price = 3 Crore

P&L on Property = +10 Lakh ----- (1)

Rental per month = Rs.500,000/-

Number of months rent collected = 12

Total Rental income = 12 * 500,000 = Rs.60,00,000/- ----- (2)

Net P&L = (1) + (2)

= Rs.70,00,000/-

Net Yield = Net P&L / Buy price

= 70 Lakh / 3 Crore

= 24.14%

Notice, in all the three scenarios, the rental yield was fixed at 20% that dint change at all. But the net yield changed, based on the transaction prices.

In summary –

- The rental yield and the net yield matches only when the buy and sell remains the same
- The net yield is lesser than the rental yield when the buy price is higher than the selling price
- The net yield is higher than the rental yield when the buy price is lower than the selling price.

The point that I'm trying to make here is that net yield is very different from the rental yield.

Now, let us snap back to the bonds world and make few comparisons –

Buy price of the property = Buy price of the bond

Sell price of the property = Sell price of the bond

Rental yield = Coupon

Net yield = Yield to maturity or YTM.

Look at this again –

Bond name	tenure	Price/unit	YTM	Coupon	Frequency	Taxable
BIC Limited <small>(No tax) (AA-100)</small>	41 months	1,115.83	5.40%	8.01%	Yearly	No

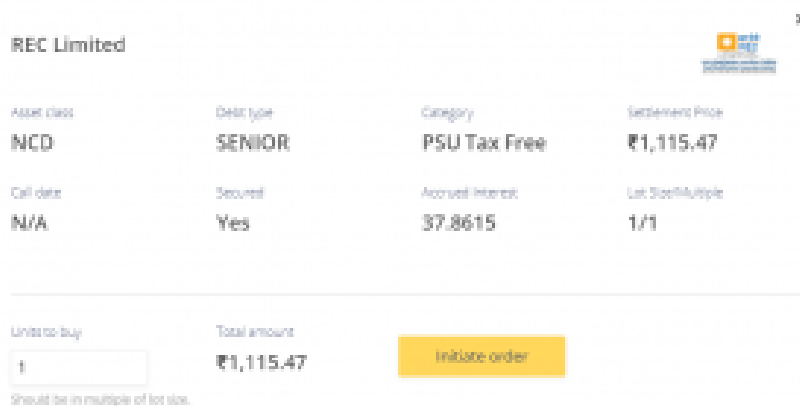
The coupon is 8.01%, but the YTM is 5.4%. Why do you think the YTM is lesser than the coupon itself?

Well, that is because you buy this bond at Rs.1115.03/- and upon maturity, this bond is redeemed at Rs.1000/- (scenario 2).

So the effective return you experience here is 5.4%.

15.4 – Accrued Interest

Clicking on the yellow invest button takes you to the next screen on the platform, which gives you a bit more information on the bond.



Asset class	Debt type	Category	Settlement Price
NCD	SENIOR	PSU Tax Free	₹1,115.47
Call date	Secured	Accrued Interest	Lot Size/Multiple
N/A	Yes	₹7.8615	1/1

Invest to buy	Total amount	Initiate order
1	₹1,115.47	

Should be in multiple of lot size.

I suppose you are familiar with most of the information present on this screen, except for the accrued interest bit. The concept of accrued interest is straightforward to understand.

We know the REC bond pays a coupon of 8.01% on Rs.1000/- face value. The Rupee value of the coupon is Rs.80.01/-.

The coupon of Rs.80.01/- gets paid once a year or once in 365 days. We know the date of payment is the 1st December every year.

The last coupon was paid on 1st December 2019, and the next coupon will be paid on 1st December 2020. Between the previous coupon paid and the next coupon date, interest accrues daily.

If you do the math –

Daily accrued interest = Yearly coupon amount / 365

= 80.01/365

= 0.219452 Paisa.

Therefore, by holding this bond, the bondholder earns 0.219452 daily.

Today is 21st May 2020; it is 172 days since the last coupon paid. Therefore, by holding this bond for 172 days, the owner of this bond is entitled to receive –

$0.219452 * 172$

= **Rs.37.745/-**

From the screenshot above, you can see that the accrued interest is Rs.37.86/-, which is approximate to what we have calculated.

The settlement price seen is Rs.1115.47/-, which also includes the accrued interest. Therefore, you can break the settlement price into two components –

Settlement Price = Price of the Bond + Accrued Interest

= 1077.609 + 37.8615

=**1115.47/-**

So why does the settlement price include the accrued interest?

Well, this is because when you buy the bond, you need to compensate the bond seller the interest he has earned for the duration he has held the bond.

Hence, the settlement price includes accrued interest. Also note that when the next coupon is paid by REC, you as the current bondholder will receive the full coupon amount of Rs.80.01/- (thus compensating for the accrued interest that you paid to the seller).

While we are at it, a bit of bond terminology for you.

The settlement price is also called the '**Dirty Price**' of the bond and the settlement price minus the accrued interest is called the '**Clean price**' of the bond

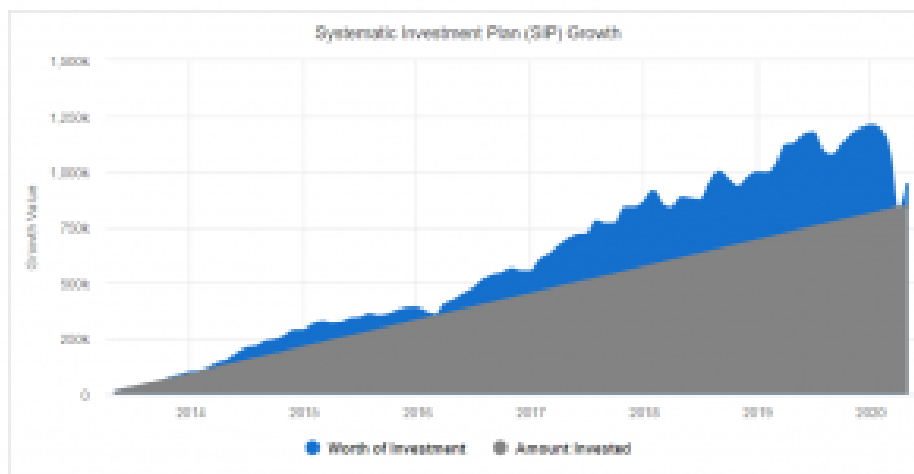
15.5 – Should you invest in Bonds?

If you've read Varsity by now, you'd probably know me as a one hundred percentage equities guy. I've mentioned this in several places with due caution that 100% equity is not perhaps the right approach to build a long term portfolio. I always knew that I have to fix this and start to diversify my little savings. It's just that I pushed my asset allocation plans further and further.

Well, thanks to COVID, this happened –



A 40% decline in the Index in less than a month. All gains wiped clean. For the first time since I started investing in the markets, I saw that the ten year SIPs go negative as well. I do not think this had happened in the 2008 market crash either. Look at this chart; I've got this from Value Research website –



Perhaps this is a strong enough reason for me to get started with asset diversification. Maybe it is a good idea for you as well if you have not thought of asset allocation yet.

On the asset side, you now have access to –

zerodha.com/varsity

- Direct Equities
- Equity Mutual funds
- Direct Bonds
- Debt Mutual funds
- Sovereign Gold bonds
- Fixed Deposits from your bank

I think with these assets; you can build any combination of the portfolio with different asset allocation patterns to achieve any portfolio goal.

In the coming chapters, I will discuss portfolio compositions and how you can set up portfolios to match your goals, but before we do that, we will next discuss the Index fund.

Stay tuned.

Key takeaways from this chapter

- In a tax-free bond, the coupons are tax-free
- PSU debt carries an implicit sovereign guarantee, and hence very low credit risk
- The coupon is paid as a percentage of the face value
- YTM of a bond is the effective yield the bondholder experiences
- The bond buyer pays accrued interest to the bond seller

CHAPTER 16

Index Funds

16.1 Overview

In chapter 6 & 7, we discussed the basics of a mutual fund and how a fund works. Just to recap, a mutual fund is a pooled investment vehicle that takes your money, invests and manages it on your behalf. What distinguishes one fund from another is the management part. There are 100s of strategies that AMCs employ but broadly speaking, you can categorize them as:

- Active
- Passive

In an active mutual fund, the fund manager tries to beat a benchmark or deliver *alpha*. In simple terms, alpha is the excess return above a benchmark.

Before we go further, it's important to understand what a benchmark is and why do you need a benchmark. A benchmark serves as a point of reference for measuring performance because you cannot look at the performance of a mutual fund in isolation. Every mutual fund benchmarks itself to an index like the Nifty 100, Nifty Midcap 150, Nifty Smallcap 100, etc depending on the category it operates in. Benchmarks also give you an idea of the returns you would've made if you had done nothing and just bought the index.

Now, the job of the active manager is to deliver returns over and above the benchmark. He does this by actively picking stocks or based on various strategies and by deviating from the benchmark to various degrees. For

example, one of the most widely used strategies among mutual funds is Value investing. Here a manager tries to pick stocks that are cheaper than their intrinsic value. On the other end of the spectrum, there's growth investing where a manager invests in companies, as the name implies that is growing at a faster rate than their peers/industry and also invest most of the earnings back in the business to fuel the growth. Similarly, there are hundreds and thousands of approaches and strategies used by managers, which is outside the scope of this chapter, but I hope you got the idea. The job of an active manager is to beat the benchmark.

A passive fund or an index fund, on the other hand, simply tracks the performance of a benchmark as closely as possible. It does not try to outperform or underperform the benchmark, but just match the returns before costs (expense ratio). Mutual funds have costs, so the return of an index fund, broadly speaking, will be the benchmark returns minus costs.

So, when you invest in a Nifty 50 index fund, all you are getting is Nifty 50 returns. If Nifty 50 returns 10% this year, your return will be 10% minus the expense ratio. It's as simple as that.



16.2 History

Before we look at the performance of active funds, why index funds make sense etc, I think it's important to know a little history about how index funds came to be.

The story of how the first index fund came to be is quite fascinating. John C. Bogle, also known as Jack Bogle, the founder Vanguard, launched the first index fund in 1976. The fund was called the First Index Investment and tracked the S&P 500 Index. The fund was later renamed as the Vanguard 500 Index Fund. For context, the S&P 500 consists of the 500 biggest US companies, and the index is a market capitalization-weighted. Meaning, the total free float outstanding shares of a company are multiplied by its price

and higher the value, higher the weight of that stock in the index, and it's that simple. Nifty and Sensex follow the same methodology as well minus a few technicalities.

The crazy thing about the first index fund is that the launch was an abject failure. Vanguard led by Jack Bogle was hoping to raise \$150 million during the underwriting process but managed to raise just \$11.3 million. They didn't even have enough money to buy all the shares in the index. What they ended up doing is they sampled the index, they just bought enough stocks across sectors to broadly resemble an index, and it worked out well in the end. If Jack Bogle had given up, we probably would have had to wait longer for an index fund and history would have been much different.

Even though it was launched in 1976, the Vanguard 500 Index Fund didn't reach the \$1 billion mark until 1990. As of writing this chapter, however, the fund has \$500 billion in assets and is the largest mutual fund on the planet. This fund alone is bigger than the entire Indian mutual fund industry, which has about \$350 billion in assets. As for Vanguard, it is the second-largest AMC in the world with over \$6 trillion in assets, next only to Blackrock, which has close to \$7 trillion in assets.

India

IDBI Principal was the first AMC to launch an index mutual fund tracking Nifty in India. The scheme later became the Principal Nifty 100 Equal-Weight fund. Benchmark AMC was the first to launch Niftybees – an index exchange-traded fund (ETF) tracking the Nifty 50. Benchmark was later acquired by Goldman Sachs India which was acquired by Reliance mutual fund which was acquired by Nippon.

Today, the biggest mutual fund in India is an Index fund – the SBI Nifty 50 ETF with over Rs 60,000 crores in AUM. Before you start thinking when did index funds become so popular in India, they aren't 😊 Pretty much all of the money in this ETF is from The Employees' Provident Fund Organisation (EPFO). It started investing in equities since 2015 and Nifty, and Sensex ETFs were the chosen routes. The AUM of Index mutual funds is a better proxy of the popularity of these funds and as of April 2020, they just had Rs 8,800 crores in AUM.

V	Other Schemes							
35	Index Funds	35	634,346	1,025.96	391.12	634.84	9,952.10	8,823.99
36	GOLD ETF	11	566,320	867.24	136.31	730.93	9,198.09	8,515.40
37	Other ETFs	76	2,003,382	3,471.54	3,650.99	(179.45)	164,051.02	152,256.53
38	Fund of funds investing overseas	28	199,688	244.51	138.97	105.54	3,282.22	3,007.49
	Sub Total - V (35+36+37+38)	150	3,403,736	5,609.25	4,317.39	1,291.86	186,483.43	172,603.40

This is nothing compared to the Rs 119,861 crores in active large-cap mutual funds, for example.

16.3 Definition of an index fund

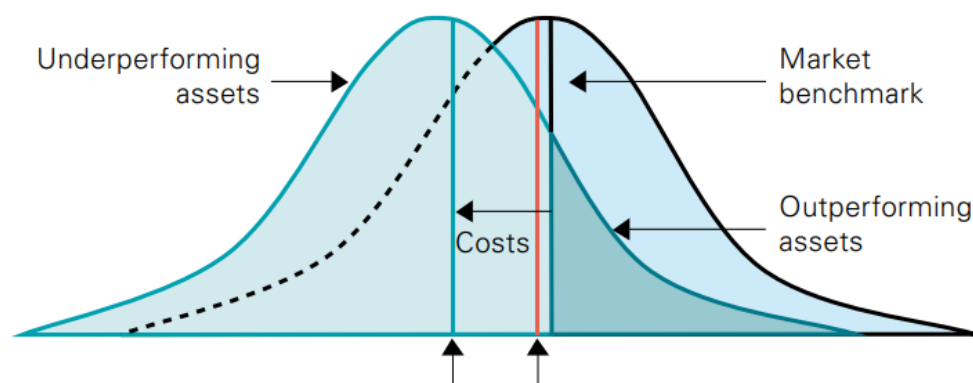
The active vs passive debate is one of the longest-running, loudest, and one of the most controversial debates in finance, I'll get to that later. But even when it comes to the definition of an index fund, there are widely different thoughts. Today, any fund that tracks an index is called an index fund. You can technically create an index of companies whose name starts with the letter G and then launch a fund tracking that index. But the very first index fund was tracked the S&P 500 which is a market capitalization-weighted index. But according to the hardcore finance guys and academics, a true index fund is one that tracks a broad cap-weighted index like the Nifty 50, S&P 500 etc.

16.4 Do index funds work?

You may be wondering given that index funds just track a benchmark and not seek to outperform, how do they even make sense, it's a fair question.

Outperformance is always better than just benchmark returns, right? Let's unwrap this. There are a bunch of complicated ways this can be answered, but here's the gist. If you think about it, markets are a zero-sum game, meaning for every person making money, somebody has to lose money. Here's an illustration to explain that:

Figure 2. Market participant returns after adjusting for costs



Source: Vanguard.

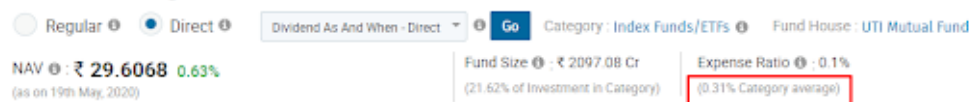
This means that all active managers collectively cannot beat the market. The reason is cost, and they are the biggest drag on the performance.

Now forget that you read the previous paragraph for a minute and let's look at costs. An active mutual fund seeks to outperform any index, which means it needs the resources to do so. This involves hiring a bunch of analysts, getting the best Chief Investment Officer(s), the best research, the best tools –

your Bloomberg Terminals what have you and other things. All this doesn't come cheap, and there are costs involved.

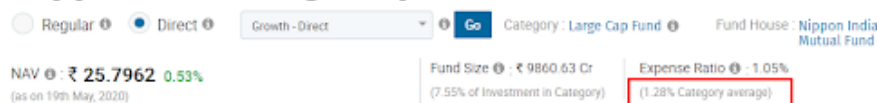
How much? Let's compare the expense ratios of active large-cap mutual funds and index mutual funds. Moneycontrol shows the category average expense ratios, which allows you to quickly get a sense. The category average expense ratio of active mutual large-cap mutual funds (direct plans) is 1.28%

UTI Nifty Index Fund - Direct Plan - Dividend



The category average for index funds, on the other hand, is 0.31%.

Nippon India Large Cap Fund - Direct Plan - Growth



Note: the average expense ratios will be far higher for regular plans of mutual funds.

That's almost a 1% difference. Though this might seem small, costs compound over a long period and significantly eat into your returns. If you are investing on Coin, you'd have already realized this and made the smart choice. But just to reiterate, you can use the savings calculator on Coin to calculate the impact of costs. Here's the difference between paying .6% and 1.6% on a Rs 10,000 SIP over 20 years. That tiny 1% difference will cost you Rs 12.8 lakhs.

Mirae Asset Large Cap Fund - Direct Plan - Growth



Assuming that an active mutual fund is charging 1.5% is benchmarked to Nifty 50 for example and let's assume that the Nifty Index fund charges 0.10%. Right out of the gate, the active fund is at a disadvantage and has to generate 1.4% just to keep up with the benchmark, and I am not even talking about outperforming the benchmark.

Index funds, on the other hand, are extremely cheap. The SBI Nifty ETF charges 0.07% for comparison. The reason why index funds and ETFs are cheap is that they don't need highly paid star fund managers, research teams etc. All they have to do is copy an index, and that's it.

16.5 Historical Performance

Let's look at the historical performance of active funds and index funds. I know at this point, you are thinking about those huge past returns displayed prominently on AMC sites, Value research and elsewhere. S&P – the world's

largest index provider publishes a semi-annual report called the S&P Indices Versus Active (SPIVA®) scorecard. This report looks at the performance of active funds versus a standardized benchmark period for 1,3,5,10 periods. Here's how the Indian active mutual funds have fared as of the end of 2019.

On 5 years, 82% of active large-cap funds have underperformed the S&P BSE 100 index, which consists of the 100 largest Indian companies by market cap.

Although the performance of mid and small-caps looks promising, things seem to be changing. With the recategorization exercise, SEBI has clearly defined the universe of stocks fund managers can invest in which will make outperformance harder. Up until last year, we didn't have mid-cap index mutual funds, we had ETFs, but they were illiquid. Several AMCs have started launching them over the past year or so.

As for small-caps, active or passive, I don't think investors should invest in these funds at all. They seem to fall as fast as they go up, which makes it frustrating for investors to hold on to. That gut-wrenching volatility also increasing the chances of investors buying high and selling low.

16.6 Bottomline

Based on the numbers at any given point, your chances of picking a consistently performing active fund is worse than 50:50. In the case of large-caps, it's consistently worse. And it's going to get worse as the Indian capital markets deepen. Let's take the case of large-caps, and there are 40 AMCs and 40 large-cap funds. Broadly speaking everybody pretty much has access to the same information and everybody can only invest in the top 100

stocks, outperforming the benchmark isn't easy, not to mention the cost disadvantage they have vs index funds.

And there's also the issue of funds just hugging benchmarks which is quite common – this is also referred to as closet indexing. Most funds don't deviate significantly from the benchmarks, and after expenses, they are guaranteed to underperform the index.

There's another way of looking at this. Famed researcher Michael Mauboussin, in this paper, termed this the paradox of skill:

“In cases where two or more players have the same level of skill—whether that skill is high or low doesn't matter—the skills of the players offset one another and luck becomes the primary determinant of the outcome. “Players” can be athletes, investors, or business executives. In many competitive realms, including investing, the skills of the participants have improved on an absolute basis but have shrunk on a relative basis. Today's investor has vastly more resources and training than his or her predecessor from years past. The problem is that investors, broadly speaking, have gotten much better which means that the difference between the skill of the best and the average participant isn't as great as it used to be”

16.7 Fixed income (Debt)

So far, when I say an index fund, I've meant equity index funds. Globally in the last 5-10 years index funds including debt index funds, have experienced phenomenal growth. Bond ETFs recently crossed the \$1 trillion mark in the US. In case you are wondering if there are any debt index funds in India, these are very early days for equity index funds, let alone debt index funds. Except

for the recently launched Bharat Bond ETF and fund of fund, we don't have any debt index funds.

The Indian debt markets are very tiny and notoriously illiquid. Except for G-Secs and the best AAA-rated bonds, most other bonds trade sparingly. And unlike equities which trade on the exchanges and there's transparent price discovery, most of the trading activity in bonds happens over the counter (OTC) or off-market. It's the same even in the US, where the debt market is bigger than the equity market.

This, among many other things, makes indexing debt very hard, but maybe as the markets evolve, things should change. There are companies like Tradeweb trying to bring electronic trading to the bond markets.

16.8 Active or passive (Conclusion)

After reading all this, you might be wondering if you should choose active or index funds. It's not active or passive but active and passive. You can mix both in your portfolio and have allocation based on your risk tolerance. But always pick a fund that has a long track record and sticks to its stated mandate. Before the SEBI scheme recategorization exercise, funds didn't have any restrictions on how they could invest. Some funds used to be labelled large-cap and used to invest in mid-cap and small-caps to juice returns. So, picking a fund where the manager does what he says is important. Funds with cowboy managers pretty much always end up as disasters.

I have also mentioned exchange-traded funds (ETFs) in the chapter, although they are similar to index funds, there are some important differences. In the next chapter, we'll discuss ETFs. Similar to index funds, there's a category of funds called smart-beta funds, which have grown increasingly popular over the past decade. The term "smart beta" is meaningless, at the core these are rules-based funds, and we'll also briefly understand the basics.

CHAPTER 17

Arbitrage Funds

17.1 – Arbitrage

We were to move ahead and discuss MF attributes and gradually steer our way to identify techniques of building a mutual fund portfolio. While I was all set to do that, I just remembered we hadn't discussed the 'Arbitrage Funds', which for some reason has all the market attention these days. So I'll keep this chapter short, consider the Arbitrage fund and move ahead.

Before we understand the 'Arbitrage Fund', we need to understand what 'Arbitrage' means. Of course, if you are a regular Varsity reader, then this is something you guys are familiar. We have discussed arbitrage on a couple of occasions, in particular, we have looked at arbitrage in the form of calendar spreads, pair trading, and put-call parity.

For others who are not familiar with 'Arbitrage', here is a quick note.

All of us, at some point in life, would have carried out an arbitrage transaction. For example, when I was in my 1st-year college, I'd pay my cousin in Singapore to buy me Rock n Roll audio cassettes from Rs.100/- per tape and sell the same here in Bangalore for Rs.150/-. People here would happily buy the tape at Rs.150/- because there was no other source for them to buy these tapes.

The above is an arbitrage transaction.



In an arbitrage transaction, you buy an asset (like the audiotape) from one market (Singapore) where the asset is selling cheap (Rs.100/-) and sell the same asset (the audiotape) in another market (Bangalore) for a higher price (150). The arbitrageur (i.e. me in this example), makes a risk free profit (Rs.50/- in this case).

If you think about this, arbitrage is beautiful, right? If the above were to hold, all I had to do in life was buy tapes from Singapore and sell the same in Bangalore. I do this in large quantities, and I'd be sitting on a massive pile of cash.

But if only life was that easy 😊

The assumption here is that there are continuous supply and demand in both markets. I mean imagine a situation where I buy tapes worth Rs.100,000/- with a hope to sell it for Rs.150,000/- and suddenly I realise that people in

Bangalore are no longer interested in Rock n Roll, but instead prefer listening to Boyzone! Then my money is gone, right?

So the point is, unlike the popular notion, arbitrage is not risk-free. What we discussed is an example of the supply-demand risk associated with the arbitrage opportunity.

But it is not just that.

Imagine another scenario, where a friend of mine figures my little trick, and he does the same, i.e. buy tapes from Singapore at Rs.100/- but sells the same at a slightly lower rate at say Rs.140/- to ensure he beats me at my own game.

What do you think would happen next? A price war would break, I'd offer the same at say 135, he would then reduce to 125 so on as so forth till all the margins evaporate.

Point being, arbitrage opportunity or arbitrage profits shrink when more people try to exploit the same opportunity.

Now, think about the stock markets. Take a look at the snapshot below –

KIRLOSIND	4.89 % ^	562.40
KIRLOSIND <small>BSE</small>	-0.44 % v	546.40

What you see here is the quote for Kirloskar Industries, on NSE it is trading at 562.4 per share, and on BSE the same company is trading at 546.40 per share. There is a difference of 16 Rupees.

The above is an arbitrage opportunity. All you have to do is buy Kirloskar Industries at 546.4 in BSE and sell the same stock in NSE at 562.4. After all, it's the same asset but two different prices in two different markets.

If one were to execute this transaction well, then a 16 Rupee profit is more or less guaranteed.

A mutual fund scheme that manages money by mostly chasing such arbitrage opportunities in the market is called 'The Arbitrage Fund'.

17.2 – The Arbitrage Fund

While we looked at one type of arbitrage opportunity in the previous section, in reality, there are many types of arbitrage opportunities in the market.

For instance, one of the most attractive arbitrage opportunity that the mutual fund looks for is the 'Spot-Future' arbitrage, wherein the futures trade at a price which is significantly away from its fair value when compared to its underlying price.

In other words, at any given point, the fund is continuously long or short on the stock in either the equity or futures market.

Did the above line confuse you? Let me elaborate this a bit just to give you clarity on what happens under the hood of an Arbitrage Fund. Take a look at the snapshot below –

MARUTI	-0.21 %	▼	5714.40
MARUTI JUN FUT	0.46 %	▲	5735.60

As of today, i.e. 18th June 2020, the stock price of Maruti is at Rs.5,714.4/- per share. However, Maruti's future's is trading at Rs.5,735.6/-.

The difference between cash and futures is –

$$5,735.6 - 5,714.4$$

$$= \mathbf{21.2}$$

The difference between cash and futures is called the spread or the basis. One can capture the spread by setting up an arbitrage. Remember the thumb rule in arbitrage is to buy the asset in the cheaper market and sell the same asset in the expensive market. Hence, all one has to do here is –

Buy Maruti @ 5714.4 in the cash market

Sell Maruti Futures (Expiring in June)@ 5735.6

It is important to ensure the above transaction is simultaneously executed. Once you do, you've locked in the spread, and it no longer matters where Maruti trades because the spread of 21.6 is guaranteed.

The key here is the fact that on the expiry day, Maruti in cash and Futures will trade at a single price (unlike today). The phenomenon is called 'Cash-Futures Convergence'. So this trade has to be unwound or squared off or closed on the expiry day.

For example, assume on the expiry day, Maruti trades at 5780 in both the cash and futures market. The P&L is as follows –

Cash market trade

Buy @ 5714.4

Sell @ 5780.

$P\&L = 5780 - 5714.4$

$= + 65.6$

Here you make a profit of 65.6.

Futures market trade -

Sell @ 5735.6

Buy @ 5780

$P\&L = 5735.6 - 5780$

$= -44.4$

Here you make a loss of 44.4.

So, on the one hand, you make a profit of 65.6, and on the other, you lose 44.4, but overall you make 21.2, i.e. $65.6 - 44.4$.

The point here is that the spread is locked and you make that no matter what happens. I'd encourage you to do the same math at few other price points and see what happens.

Of course, there are other technicalities like rollover, transaction costs, execution risk, etc. But there is no point getting into these details. All you need to do if understand what arbitrage is and what happens in an arbitrage fund.

Have a look at the following; this is an extract of the investment objective of DSP's Arbitrage fund -

The investment objective of the Scheme is to generate income through arbitrage opportunities between cash and derivative market and arbitrage opportunities within the derivative market. Investments may also be made in debt & money market instruments.

As you can see, the fund simply states that they aim to generate income through the cash and derivatives market, without getting into specific strategy details. Some of the funds also use the term ‘low volatility returns’ in their scheme description.

About the Scheme

An arbitrage scheme that seeks to generate low volatility returns by using arbitrage and other derivative strategies in equity markets and investments in a short-term debt portfolio.

A pure arbitrage trade such as the spot-futures arbitrage is inherently less risky with a predictable outcome; hence it is naturally low volatile.

However, one should not take this at face value. Yes, if the fund is 100% focused on arbitrage opportunities, the low volatility bit would have been valid. But then, look at SEBI’s definition of the Arbitrage Fund –

5	Arbitrage Fund	Scheme following arbitrage strategy. Minimum investment in equity & equity related instruments- 65% of total assets	An open ended scheme investing in arbitrage opportunities
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An Arbitrage fund has a minimum of 65% of the funds in Arbitrage strategies, which implies that they are free to do whatever they want with the balance of

35% of the funds. There is no restriction on that. The usual practice for Arbitrage funds is to invest the balance 35% in debt funds, and since there is a restriction on duration, funds usually chase yields. Given this, an arbitrage fund is not a 'low volatile' 😊

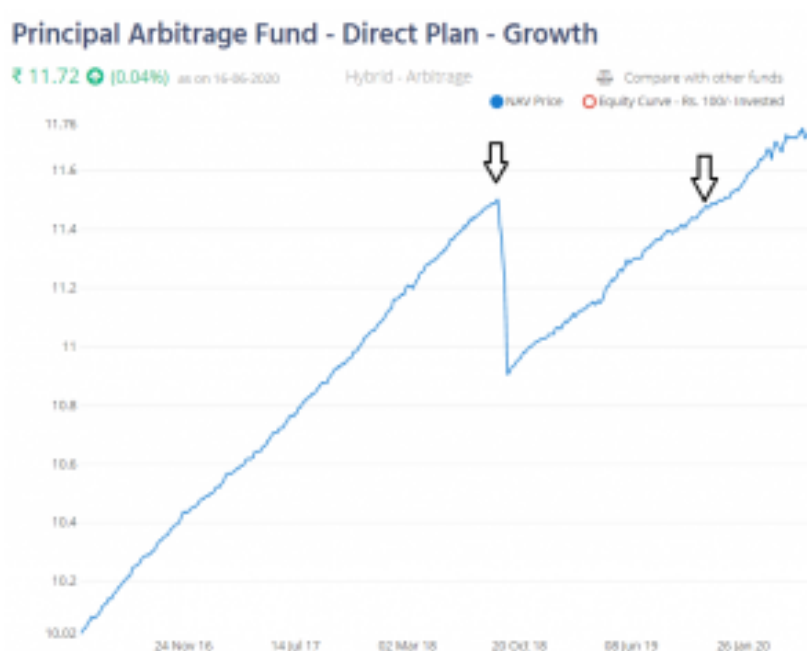
Have a look at the portfolio of ICICI Pru's Arbitrage fund –

Equity Shares	88.78%	-88.88%	Tata Steel Ltd.	0.00%	-0.00%
Auto	2.89%	-2.89%	Finance	0.00%	-0.00%
Maruti Suzuki India Ltd.	1.35%	-1.33%	HDFC Ltd.	0.00%	-0.00%
Tata Motors Ltd.	0.00%	-0.00%	Rajaj Finance Ltd.	1.29%	-1.23%
Mahindra & Mahindra Ltd.	0.00%	-0.00%	HDFC Standard Life Insurance Company Ltd.	0.00%	-0.00%
Rajaj Auto Ltd.	0.00%	-0.00%	Rajaj Finance Ltd.	0.00%	-0.00%
Eicher Motors Ltd.	0.00%	-0.00%	Power Finance Corporation Ltd.	0.00%	-0.00%
Havya Motors Ltd.	0.00%	-0.00%	Muthoot Finance Ltd.	0.17%	-0.17%
Auto Ancillaries	0.00%	-0.00%	Rural Electrification Corporation Ltd.	0.18%	-0.18%
Moharajani Sural Systems Ltd.	0.00%	-0.00%	ICICI Prudential Life Insurance Company Ltd.	0.18%	-0.18%
Exide Industries Ltd.	0.10%	-0.10%	BSR Life Insurance Company Ltd.	0.13%	-0.13%
Bosch Ltd.	0.18%	-0.18%	Mahindra & Mahindra Financial Services Ltd.	0.00%	-0.00%
Amara Raja Batteries Ltd.	0.04%	-0.04%	Manappuram Finance Ltd.	0.00%	-0.00%
Apollis Tyres Ltd.	0.00%	-0.00%	Chotamanilam Investment And Finance Company Ltd.	0.00%	-0.00%
MRF Ltd.	0.00%	-0.00%	Max Financial Services Ltd.	0.00%	-0.00%
Banks	0.00%	-0.00%	Gen	0.00%	-0.00%
ICICI Bank Ltd.	0.00%	-0.00%	G&S (India) Ltd.	0.00%	-0.00%
Aiaa Bank Ltd.	0.00%	-0.00%	Mahanager Gas Ltd.	0.19%	-0.19%
State Bank Of India	1.00%	-1.00%	Petrochem LFG Ltd.	0.10%	-0.10%
Industrial Bank Ltd.	0.00%	-0.00%	Industrial Capital Goods	0.00%	-0.00%
The Federal Bank Ltd.	0.18%	-0.18%	Siemens Ltd.	0.00%	-0.00%
Bank Of Baroda	0.14%	-0.14%	Bharat Heavy Electricals Ltd.	0.17%	-0.17%
Punjab National Bank	0.00%	-0.00%	Bharat Electronics Ltd.	0.18%	-0.18%
Canara Bank	0.04%	-0.04%	Industrial Products	0.00%	-0.00%
Kotak Mahindra Bank Ltd.	0.00%	-0.00%	S&P Ltd.	0.00%	-0.00%
Cement	0.04%	-0.04%	Bharat Forge Ltd.	0.00%	-0.00%
UltraTech Cement Ltd.	1.04%	-1.04%	Cummins India Ltd.	0.00%	-0.00%
Greaves Industries Ltd.	0.00%	-0.00%	Media & Entertainment	0.00%	-0.00%
Amalgam Cement Ltd.	0.00%	-0.00%	Zee Entertainment Enterprises Ltd.	0.00%	-0.00%
Bheav Cementa Ltd.	0.10%	-0.10%	Sun Tv Network Ltd.	0.18%	-0.18%
AOC Ltd.	0.00%	-0.00%	Minerals/Mining	0.00%	-0.00%
Chemicals	0.00%	-0.00%	Cool India Ltd.	0.00%	-0.00%
Pollite Industries Ltd.	0.00%	-0.00%	NMDC Ltd.	0.00%	-0.00%
Construction	0.00%	-0.00%	Nippon - Precious Metals	0.00%	-0.00%
DLP Ltd.	0.00%	-0.00%	Varaha Ltd.	0.00%	-0.00%
Construction Project	1.00%	-1.00%	Hindalco Industries Ltd.	0.00%	-0.00%
Larsen & Toubro Ltd.	1.00%	-1.00%	National Aluminium Company Ltd.	0.00%	-0.00%
S&P Infrastructure Ltd.	0.10%	-0.10%	Oil	0.00%	-0.00%
NCC Ltd.	0.00%	-0.00%	Oil & Natural Gas Corporation Ltd.	0.00%	-0.00%
Consumer Durables	0.00%	-0.00%	Paper	0.00%	-0.00%
Titan Company Ltd.	0.00%	-0.00%	Century Textiles & Industries Ltd.	0.00%	-0.00%
Havells India Ltd.	0.10%	-0.10%	Petroleum Products	1.18%	-1.18%
Voltas Ltd.	0.10%	-0.10%	Bharat Petroleum Corporation Ltd.	0.00%	-0.00%
Bata India Ltd.	0.00%	-0.00%	Indian Oil Corporation Ltd.	0.00%	-0.00%
Consumer Non Durables	2.10%	-2.10%	Rafines Industries Ltd.	0.00%	-0.00%
Hindustan Unilever Ltd.	4.20%	-4.20%	Pharmaceuticals	0.00%	-0.00%
Dabur India Ltd.	0.00%	-0.00%	Sun Pharmaceutical Industries Ltd.	2.50%	-2.50%
Marico Ltd.	0.00%	-0.00%	Dr. Reddy's Laboratories Ltd.	1.00%	-1.00%
United Spirits Ltd.	0.00%	-0.00%	Lupin Ltd.	0.00%	-0.00%
Hessle India Ltd.	0.00%	-0.00%	Cipla Ltd.	0.00%	-0.00%
Glaxo Consumer Products Ltd.	0.00%	-0.00%	Drugs Laboratories Ltd.	0.00%	-0.00%
Colgate - Palmolive (India) Ltd.	0.00%	-0.00%	Aurobindo Pharma Ltd.	0.00%	-0.00%
Bayero Pharms India Ltd.	0.00%	-0.00%	Carila Healthcare Ltd.	0.18%	-0.18%
United Breweries Ltd.	0.00%	-0.00%	Glenmark Pharmaceuticals Ltd.	0.00%	-0.00%
Ferrous Metals	0.00%	-0.00%	Power	1.00%	-1.00%
JSVY Steel Ltd.	0.00%	-0.00%	Power Grid Corporation Of India Ltd.	0.00%	-0.00%
Jindal Steel & Power Ltd.	0.18%	-0.18%			

Every single equity position is hedged with its futures; these are mostly arbitrage positions. As we can see, nearly 65% of the exposure is the arbitrage position. The balance 35% is parked in debt and cash –

Debt Holdings		31.51%
Government Securities		
Short Term[®]		3.74%
• 07.80% GOI 2021	SOV	2.70%
06.18% GOI 2024	SOV	0.99%
07.00% GOI 2021	SOV	0.05%
Long Term[®]		0.98%
06.45% GOI 2029	SOV	0.98%
Corporate Securities		1.44%
HDFC Bank Ltd.	CRISIL AA+	0.96%
Bharti Telecom Ltd.	CRISIL AA+	0.48%
CPs and CDs		2.05%
IndusInd Bank Ltd.	CRISIL A1+	1.41%
LIC Housing Finance Ltd.	CRISIL A1+	0.64%
Cash, Call, TREPS & Term Deposits		23.29%
Net Current Assets		2.79%
Total Net Assets		100.00%

The presence of debt papers is what makes the arbitrage funds risky. How risky may you ask? Well, look at this –



If I'm not wrong, Principal Arbitrage Fund held a concentrated debt position in DHFL bonds, which DHFL defaulted upon sometime in October 2018. Naturally, the fund took a hit, and the NAV nose-dived from 11.5 to about 10.9, translating to a run of 5.22%.

In all fairness, 5.22% is not a big hit, but the problem is the time spent on recovery. It took nearly 1.5 years to recover 5.22% and push the NAV back to 11.5.

This chart teaches us three lessons about the Arbitrage fund –

- As many investors believe, Arbitrage funds are not risk-free. Thanks to the debt component, there is an element of risk.
- Returns hover in the range of about 5-7%, which can get wiped out in a single shot if things go wrong.
- Recovery takes time. Hence it is prudent to have a long term investment horizon while investing in an arbitrage fund.

I hope I've not scared you away from investing in an Arbitrage fund 😊

The good part of an arbitrage fund is that it behaves as a debt fund but gets taxed as an equity fund. We will have a chapter dedicated to mutual fund taxation, till then, here is how taxation works (very broadly) –

- Gains from Equity funds sold within 12 months are treated as short term capital gain, attracts a 15% tax.
- Gains from Equity funds sold after 12 months are treated as long term capital gain, attracts a 10% tax, after an exemption of Rs.1,00,000/-
- Gain from debt funds held for less than 36 months is treated as short term capital gains, attracts a tax as per the investor's income tax slab.
- Gain from debt funds held for more than 36 months is treated as long term capital gains, attracts a 20% tax post indexation.

Given the tax treatment, in my opinion, if you are prepared to take some risk, then use the Arbitrage fund as a proxy for say low duration or a short duration fund. The risk and return profile are similar for these funds.

Hence, in my opinion, the real arbitrage in an arbitrage fund is the tax arbitrage, i.e. it behaves like a debt fund and gets taxed as an equity fund.

Lastly, when you look for an arbitrage fund, it is essential to look at the debt component of the portfolio. Ensure the fund does not have concentrated debt positions and also ensure there are no papers which are below investible grade.

Also, it is crucial to confirm that the arbitrage fund is not holding any unhedged equity position because this defeats the purpose of an arbitrage fund.

Next up is Mutual fund metrics. Stay tuned.

Key takeaways from this chapter

1. Arbitrage funds are hedged position
2. SEBI mandates AMCs to invest a minimum of 65% in arbitrage strategies
3. Mutual funds usually spend up to 35% in debt
4. Arbitrage funds can be volatile
5. One can consider Arbitrage funds as a proxy for low/short duration funds

CHAPTER 18

Measuring Mutual Fund Returns

18.1 – Mutual Fund metrics

By now, I suppose we understand different types of mutual fund categories and what goes under the hood of each of these funds. While we have not covered the entire gamut of funds, I think we have covered the most important funds across both equity and debt.

Probably I must have discussed the Balanced fund as well, not sure why (and how) I missed that. But I also believe we have laid down a foundation for structured thinking about funds and their mandates. So I'd request you to please look upon few balanced fund factsheets, read it along with the SEBI's classification and you will understand how the balanced fund works.

Otherwise, you can always drop your queries here, and I'll be more than happy to answer them for you.

Anyway, I think we are now one step closer to understand how one can build a mutual fund portfolio for different financial goals. Before we get into the building MF portfolios, we must spend time to understand few mutual fund metrics that help us understand mutual funds better and the ways to differentiate good funds from the not so good funds.

The metrics that I'm talking about are all mentioned in the Mutual fund factsheet, and few others are mentioned in the 3rd party website such as Morningstar and Value research. We need to pick and choose the right set of metrics to learn and ignore the pointless ones.

Over the next few chapters, we will understand the following metrics that are usually published by the AMCs for the different schemes that they run –

1. Returns – Absolute, CAGR, XIRR
2. Rolling Returns
3. Expense Ratio
4. Benchmarking
5. Exit load
6. Portfolio turnover ratio
7. Standard Deviation
8. Beta
9. Sharpe Ratio
10. Capture ratios

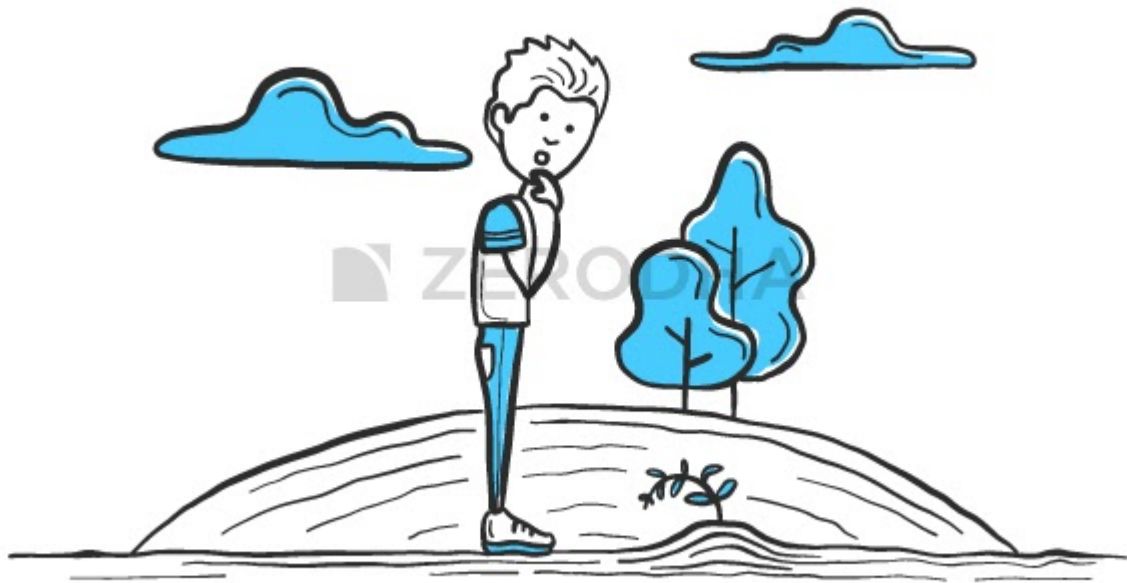
Of course, along the way, if I feel I've missed an important metrics, then I'll just add that to the list and discuss the same.

So as you can see, we have a lot to cover, so let's get started.

18.2 – Measuring MF investment performance

Mutual fund investors often get confused with the way returns are measured across investments. Most investors apply the standard return measurement technique across all types of investment. Doing so leads to wrong return

calculation and therefore, wrong analysis. Return measurement is one of the key aspects while analyzing a mutual fund. We should start our discussion with the basic concept of return measurement.



For the sake of this discussion, I'll assume that you are familiar with the systematic investment plan or the SIP. I guess the AMCs and the regulators have managed to do a phenomenal job at conveying the concept of SIP to every taxpayer in the country (well, all most all).

Hence, I will not spend time to discuss what a SIP is and its massive advantage for an investor. If you are not familiar with what a SIP is, I will request you to spend a little time on the internet; there are tons of great articles with SIP calculators to help you understand what a SIP is and how to set up one.

However, for the sake of the completeness of this discussion, let me highlight two popular investments techniques –

Lumpsum investments – In a lumpsum investment, an investor decides to invest a random amount (based on cash available) at one time. Example – I get a yearly bonus of Rs.1,00,000/-, of which I decide to invest Rs.75,000/- in a mutual fund.

Systematic Investment Plan (SIP) – SIP investments requires you to invest a fixed amount of money on a fixed monthly date in a designated fund. The investment can be weekly, fortnightly, monthly, quarterly, or even once in 6 months. For example, my very first SIP was set to invest Rs.2,500/- on 5th of every month in Sundaram Midcap fund. There is no end date to this and can go on for as long as possible.

The way one measures the return for these two investments is very different. Most investors take the starting and ending value of their investment and figure out what the return is. While this is one way to measure returns, this is not the only way. While measuring return, you need to factor time into consideration.

For example, if I tell you that I made an 80% return on a certain investment, what would your first reaction be? I guess you'd say its amazing.

Now, what if said that I made 80% over 15 years? Does it look attractive? I don't think so, right? Time adds a very important dimension while we measure the return. Hence it is always important to consider time.

Given the two types of investment, let us separate these investments into different time buckets –

Investment Type	Durtion	Type of Return
Lumpsum	< 1 Year	Absolute Return
Lumpsum	> 1 Year	CAGR
SIP	< 1 Year	Absolute Return
SIP	> 1 Year	XIRR

The table above helps us understand the different types of investment and the respective type of return we should calculate. For example, we should calculate the absolute return for a lumpsum investment which is less than one year. Likewise, we should look at the XIRR return for a SIP which is older than a year.

Although for you as a mutual fund investor, you don't really have to learn how to calculate the absolute return, CAGR or XIRR because there are tons of free return calculators available online. However, I think it will just make you a prudent investor if you take a little time to figure out how this can be done.

Let's start with the absolute return.

Remember Absolute Return matters only if the investment is less than a year. It could be a lump sum or a SIP, but as long as the investment is less than a year, use absolute return.

The calculation is straight forward. Here is an example –

On Jan 1st 2020, I invest Rs.25,000 in a Mutual Fund. On July 7th, the value of this fund is Rs.30,000/-. What is the return generated?

You should recognise that this is a lump sum invested and is under a year.

The absolute return can be calculated as –

$[\text{Ending Value}/\text{Beginning Value}] - 1$

$= 30,000/25,000 - 1$

$= 20\%$

Let's take another case. An investor invests Rs.5,000/- every month in a Mutual Fund. After six months, the value of the investment is Rs.35,000/-.

What is the return experience here?

We know that this is a case of SIP investments.

Monthly investment – Rs.5,000/-

Number of months – 6 (less than one year)

Total investment value = $5000 * 6 = \text{Rs.}30,000/-$

Current value of investment = Rs.35,000/-

We need to apply the absolute value calculation here –

$= 35,000/30,000 - 1$

$= 17\%$

For SIPs less than one year, we can indeed calculate XIRR, but from my experience, the most investor will not comprehend this number well as it is non-intuitive.

Let us revisit the SIP for less than one year a little later to understand why this may not be the best choice. For now, all you need to know is that if an investment (lumpsum or SIP) is less than a year, then you have to use absolute returns.

Next up is the CAGR.

CAGR or the Compounded Annual Growth Rate measures the 'rate at which the investment is growing'. Let us take a quick example and deep dive into this –

I invest Rs.25,000/- on 1st of July 2017 in a certain Mutual Fund. Three years later, the investment has grown to Rs.40,000/-. **What is the return on this investment?**

I've kept the question in bold to draw your attention to the question itself. We will revisit that in a bit.

You should identify that this is a lumpsum investment. Since the period is more than one year, we need to use the CAGR to calculate the return. The formula to calculate the CAGR is straight forward –

$$[\text{Ending Value} / \text{Starting Value}]^{(1/n)} - 1$$

Where n is time in years. Let us apply this formula –

$$= [40,000/25,000]^{(1/3)} - 1$$

$$= 16.96\%$$

The investment made in this fund has grown at a rate of 16.96% on year on year basis. Recognise that this is **the growth rate of the investment**.

The most common confusion for the investor is this –

I invest 25,000, which has grown to 40,000, which means a profit of 15,000.

The return should be about 60%, i.e. 15K profit on 25K investment.

Of course, there is nothing wrong with this calculation. After all, this is the absolute return we are calculating here.

The question, however, is that did you get this 60% in the first, 2nd, or 3rd year? Was it that you got the entire return in the 1st year and since then the investment has stayed flat? Or was the return generated in the 3rd year with the first two years netting zero return?

Of course, one can get into the depths of this and figure the details. But otherwise, we simply ignore the specifics and take the average growth on year on year basis. Higher the average the better investment this is.

To put this in perspective, think about a road journey. Let us say you are travelling from Delhi to Jaipur by car.

If I ask you at what speed you drove your car, will you tell me that you drove at 80 kmph from Delhi to Gurugram, 110 kmph from Gurugram to Panchgaon, about 90 kmph between Panchgaon to Neemrana so on and so forth or will you just tell me that you drove an average speed of 100 kmph?

You won't give me the split; you will give me average speed.

Likewise, when we look at a multi-year investment period, the years in between are like the town on a journey. Based on the market conditions (just like the traffic) investment generates different returns (like driving at a different speed) during these years. Some years may be positive, and few may be negative.

As a long term investor, we ignore these yearly variations in returns and take an average return of the investment, which is what CAGR does. It is the growth rate of investment.

Now, go back to the initial question, which was intentionally kept in bold. Do you think that is the right question?

No, the real question to ask should have been – ‘ I invest Rs.25,000/- on 1st of July 2017 in a certain Mutual Fund. Three years later, the investment has grown to Rs.40,000/-. What is the growth rate of this investment?’

I hope you get the subtle but a the very important distinction on the two different questions.

Ok, let’s go back to the Delhi and Jaipur example. I know that the average speed is 100 kmph. At this rate, how much time will you take to reach Ajmer, which is another 150 km away from Jaipur?

Quite easy – I know the average speed, so you are likely to take about 1 hour 30 mins to reach Ajmer.

On a similar note, I know the investment grew at 16.96%. What is the likely value of my investment if I let this investment run for another say one year?

Quite easy –

Current value at the end 3rd year = Rs.40,000

Growth Rate – 16.96%

Tenure – 1 year
Expected value = $40,000 * (1 + 16.96\%)$ — > I’m basically incrementing 40,000 by 16.96%

= Rs.46,784.28/-

Let us twist this a bit, what is the likely investment value if I let this investment run for three more years?

The formula is

Current value * (1+ growth rate)^(time in year)

= 40000*(1+16.96%)⁽³⁾

= Rs.64,000/-

This is also called the future value of the investment given a certain growth rate.

I hope you now appreciate why we need to consider the CAGR and not absolute return if the investment is more than one year.

One last thing you need to note – Higher the average speed, faster you will reach your destination. High speed also comes with high risk. Likewise, higher the CAGR, higher is the rate at which your investment is growing. The risk too is high in such investments as there could be fears of a crash in the underlying asset prices.

Anyway, I hope you are now clear about the distinction between absolute return and CAGR and when to use which one.

We will now shift focus on XIRR, which is applicable when we do SIP over multiple years.

XIRR stands for Extended Internal Rate of Return. XIRR comes in handy when you make regular investments in a mutual fund over an extended period.

Hence for SIPs, you need to use XIRR to measure the growth rate.

Assume you invest Rs.5,000/- on 10th of every month in a mutual fund. You started the investment process in December 2018; you continued to do so till June 2020. The SIP table looks like this –

Date	SIP Amount (INR)
10-Dec-18	(5,000)
10-Jan-19	(5,000)
10-Feb-19	(5,000)
10-Mar-19	(5,000)
10-Apr-19	(5,000)
10-May-19	(5,000)
10-Jun-19	(5,000)
10-Jul-19	(5,000)
10-Aug-19	(5,000)
10-Sep-19	(5,000)
10-Oct-19	(5,000)
10-Nov-19	(5,000)
10-Dec-19	(5,000)
10-Jan-20	(5,000)
10-Feb-20	(5,000)
10-Mar-20	(5,000)
10-Apr-20	(5,000)
10-May-20	(5,000)
10-Jun-20	(5,000)
Total SIP	(95,000)


So across 19 months, Rs.95,000/- has been invested. The investment amount is within the bracket to indicate that it is a cash outflow from your bank account.

Now, as on today, i.e. 10th July 2020, the value of this investment is Rs.1,10,000/-. Question is what the growth rate is? Of course, you can calculate the absolute return here. Still, hopefully, by now, you should recognize that this is a multi-year investment and absolute return does not serve any purpose.

The traditional CAGR also does not help because there are multiples investments across multiple periods. However, we still use CAGR, but with slight modifications. One can say that XIRR is a modified version of CAGR which accommodates for staggered investments.

The XIRR formula is quite intimidating. I'd suggest you do a Google image search with 'XIRR Formula' as the keyword and you'll know what I'm referring too. But luckily we need not have to apply that formula.

MS Excel has an XIRR function that you can use. The function itself is quite straightforward to use –

Date	SIP Amount (INR)
10-Dec-18	(5,000)
10-Jan-19	(5,000)
10-Feb-19	(5,000)
10-Mar-19	(5,000)
10-Apr-19	(5,000)
10-May-19	(5,000)
10-Jun-19	(5,000)
10-Jul-19	(5,000)
10-Aug-19	(5,000)
10-Sep-19	(5,000)
10-Oct-19	(5,000)
10-Nov-19	(5,000)
10-Dec-19	(5,000)
10-Jan-20	(5,000)
10-Feb-20	(5,000)
10-Mar-20	(5,000)
10-Apr-20	(5,000)
10-May-20	(5,000)
10-Jun-20	(5,000)
10-Jul-20	110,000
 XIRR (Growth Rate)	=XIRR(N7:N26,M7:M26)

If you notice, I've included the current value of the investment, I have highlighted this in bold (above the arrow mark). The number is not in brackets to indicate the fact that I can get this as positive cash flow into my bank account if I decide to exit the investment today.

The excel function to calculate XIRR requires two inputs –

1. The series of cash outflows and the current value of the investment
2. The respective dates of cash flow and the date of the current value

Once you feed these inputs, excel does what it is supposed to do and throws out the XIRR or the growth rate number for you –

Date	SIP Amount (INR)
10-Dec-18	(5,000)
10-Jan-19	(5,000)
10-Feb-19	(5,000)
10-Mar-19	(5,000)
10-Apr-19	(5,000)
10-May-19	(5,000)
10-Jun-19	(5,000)
10-Jul-19	(5,000)
10-Aug-19	(5,000)
10-Sep-19	(5,000)
10-Oct-19	(5,000)
10-Nov-19	(5,000)
10-Dec-19	(5,000)
10-Jan-20	(5,000)
10-Feb-20	(5,000)
10-Mar-20	(5,000)
10-Apr-20	(5,000)
10-May-20	(5,000)
10-Jun-20	(5,000)
10-Jul-20	110,000
XIRR (Growth Rate)	18.79%

As you can see, the growth rate or the XIRR is 18.79%.

Now, if you scroll up, you will see that I mentioned that you could use XIRR for returns for less than one year, but it's non-intuitive, therefore its better to sticks to absolute return.

Let me demonstrate why so. Have a look at this –

Date	SIP Amount (INR)
10-Dec-18	(5,000)
10-Jan-19	(5,000)
10-Feb-19	(5,000)
10-Mar-19	(5,000)
10-Apr-19	(5,000)
Total	(25,000)

This is a SIP of Rs.5,000/- for five months. The total investment is Rs.25,000/-. Assume the current value on 10th May 2019 is Rs.30,000/-. If I compute the XIRR for this –

Date	SIP Amount (INR)
10-Dec-18	(5,000)
10-Jan-19	(5,000)
10-Feb-19	(5,000)
10-Mar-19	(5,000)
10-Apr-19	(5,000)
5/10/2019	30,000
XIRR	106%

XIRR tells me that the investment has returned 106%. Do you think this is intuitive? I don't think so, because a regular MF investor sees a gain of 5,000 over a 25,000 investment. It will be very hard to convince him that the growth rate of his investment is 106%.

Hence, for this reason, most platforms show the absolute return for SIPs less than a year, rather than XIRR. In this case, the absolute return is 20%, which is intuitive for the vast majority.

18.3 – XIRR and CAGR are the same

I would like to discuss one last thing about XIRR and CAGR. I mentioned that XIRR is a modified version of CAGR. Both XIRR and CAGR serve the same purpose, i.e. to measure the rate of return over a multi-year period.

It's just that XIRR comes in handy when we have a SIP kind of investment situation. Now, if you think about it, then XIRR and CAGR should yield the same result for a lumpsum investment made over one year.

Let's take an example –

Investment date – 3rd Jan 2018

Investment amount – Rs.1,00,000/-

Today's date – 3rd Jan 2020

Current value of investment – Rs.1,25,000/-

The CAGR works out to –

$$[1,25,000/1,00,000]^{(1/2)}-1$$

$$= 11.8\%$$

If you run the XIRR function on the same set of numbers –

Date	SIP Amount (INR)
3-Jan-18	(100,000)
3-Jan-20	125,000
XIRR	11.80%

You get the same answer. I hope you get the logic behind XIRR and CAGR.

I'd want you to do an exercise as a follow-up activity. Please visit an AMC website, or visit coin.zerodha.com, pick a fund and observe how the returns are mentioned. You should now be in a position to understand what is being reported and what the returns mean.

Do share your experience by commenting below.

Up next is the rolling returns of a Mutual Fund. Stay tuned.

Key takeaways from this chapter

1. For lumpsum investments less than one year, use absolute return
2. For SIP investments less than one year, use absolute return
3. For lumpsum investments over a year use CAGR
4. For SIP investments over a year, use XIRR
5. CAGR is the growth rate of an investment
6. XIRR is a modified form of CAGR
7. CAGR and XIRR are same for lumpsum investments over 1 year

CHAPTER 19

Rolling Returns

19.1 – Point to Point return

The previous chapter gave us a perspective of how returns are calculated given the time frame under consideration. So, now if I were to provide you with the following data point –

Fund – Aditya Birla Frontline Equity

Starting date – 2nd January 2013

Starting investment value – Rs.1,00,000/-

Starting NAV – 100.83

Ending date – 2nd January 2015

Ending NAV – 161.83

And asked to find out the returns, you'd probably do it with ease. Let us do the math –

Number of units = $1,00,000 / 100.83$

= 991.7683

The ending value of investment = $991.7683 * 161.83$

= Rs.1,60,497.9

The growth in this lumpsum investment over two years can be calculated by applying the CAGR formula –

$$= [160497.9/100000]^{(1/2)} - 1$$

$$= 26.69\%.$$

Which as would recognize is a phenomenal growth rate.

Now, let us say you are mighty impressed with your investment, and you start to propagate the fund. A friend walks up to you asks for the performance, and you proudly declare the 2-year growth rate is 26.96%.

Your friend is impressed and decides to invest.

Now, I want you to think about this for a moment. What do you think is the fundamental flaw here?

Did you lie about your investment to your friend? – No

Did you lie or mislead your friend by letting him know the returns you've enjoyed? – No

Well, then what do you think is wrong here?

The growth rate of 26.96% is a massive generalization of two-year growth rate. When you mentioned this return to your friend would believe that this is the kind of performance even he is likely to enjoy.

The 26.96% return is valid when the money is invested on 2nd January 2013 and measure its growth on 2nd January 2015. In other words, the growth rate is really only for this starting and ending points; it is right for these exact two dates. It is a very personalized experience.

If I were to invest and measure the returns on any other dates, then the profits will be different.

So, whenever you measure returns or growth between two dates, the value you calculate is only valid for the two years under consideration. Hence, such a measurement of returns is also called the 'Point to point' return.

To get an accurate representation of how the two-year return (growth rate) looks, you need to calculate the 'Rolling Returns'.

19.2 – Rolling Return

The rolling return gives us a perspective of how the 'n years' return (growth) has evolved over the last 'n years'. Sounds confusing? I'm sure it is, so here is what we will do.



We will take up an example and figure out the rolling return calculation. I'm sure understanding the rolling return concept becomes much easier if you know the math behind.

By the way, many websites publish the mutual fund's rolling return, so it is not essential to remember how to calculate the rolling returns. However, by knowing the rolling returns math, you will understand the concept of rolling return quite easily.

So let us get started.

I've got the historical NAV data of AB Frontline Equity Growth-Direct. The starting date is from 2nd January 2013, and I've got this till 2nd January 2020, that's about seven years of data.

	A	B	
1	Date	NAV	
2	2-Jan-13	100.83	
3	3-Jan-13	101.29	
4	4-Jan-13	101.6	
5	7-Jan-13	101.37	
6	8-Jan-13	101.38	
7	9-Jan-13	101.16	
8	10-Jan-13	101.28	
9	11-Jan-13	100.71	
10	14-Jan-13	101.93	
11	15-Jan-13	102.36	
12	16-Jan-13	101.26	
13	17-Jan-13	101.84	
14	18-Jan-13	101.81	
15	21-Jan-13	102.01	
16	22-Jan-13	101.32	
17	23-Jan-13	101.51	
18	24-Jan-13	100.77	
19	25-Jan-13	101.64	
20	28-Jan-13	101.89	
21	29-Jan-13	101.46	
22	30-Jan-13	101.46	
23	31-Jan-13	101.36	
24	1-Feb-13	101.22	
25	4-Feb-13	100.81	
26	5-Feb-13	100.09	
27	6-Feb-13	100.2	
28	7-Feb-13	99.89	

My objective here is to find out the 2-year rolling return for this fund. To do this, I'll have to start in 2015.

I take the NAV on 2nd January 2015 and the NAV 2 years ago, i.e. on 2nd January 2013 and calculate the return between these two data points. Next, I move the date by one day, i.e. between 3rd January 2015 and 3rd January 2013, take the NAV for these two dates and calculate the return between these dates. I'll again move the date by one day, i.e. 4th January 2015/2013 and calculate the return.

So on and so forth, such that I have a time series of 2-year return.

Let us calculate the first rolling return –

NAV on 2nd January 2013 – 100.83

NAV on 2nd January 2015 – 161.83

Since its two years, we apply CAGR –

$$[161.83/100.83]^{(1/2)}-1$$

26.69%

The 2nd rolling return in this series would be –

NAV on 3rd January 2013 – 101.29

NAV on 3rd January 2015 – 161.45

$$=[161.45/101.29]^{(1/2)}-1$$

26.25%

I suppose you get the sequence. I've stacked up the data side by side on excel, and this is how it looks –

Date	NAV	2 years ago	Nav	Return
1/2/2015	161.83	1/2/2013	100.83	26.69%
1/5/2015	161.45	1/3/2013	101.29	26.25%
1/6/2015	157.25	1/6/2013	101.6	24.41%
1/7/2015	156.96	1/7/2013	101.37	24.43%
1/8/2015	159.31	1/8/2013	101.38	25.36%
1/9/2015	159.81	1/9/2013	101.16	25.69%
1/12/2015	160.76	1/10/2013	101.28	25.99%
1/13/2015	160.9	1/13/2013	100.71	26.40%
1/14/2015	160.38	1/14/2013	101.93	25.44%
1/15/2015	163.69	1/15/2013	102.36	26.46%
1/16/2015	164.3	1/16/2013	101.26	27.38%
1/19/2015	165.51	1/17/2013	101.84	27.48%
1/20/2015	167.5	1/20/2013	101.81	28.27%
1/21/2015	167.98	1/21/2013	102.01	28.32%
1/22/2015	168.7	1/22/2013	101.32	29.04%
1/23/2015	169.78	1/23/2013	101.51	29.33%
1/27/2015	171.6	1/24/2013	100.77	30.49%
1/28/2015	171.6	1/28/2013	101.89	29.78%
1/29/2015	172.05	1/29/2013	101.46	30.22%
1/30/2015	170.46	1/30/2013	101.46	29.62%
2/2/2015	170.81	1/31/2013	101.36	29.81%
2/3/2015	169.87	2/3/2013	101.22	29.55%
2/4/2015	168.68	2/4/2013	100.81	29.35%
2/5/2015	168.51	2/5/2013	100.09	29.75%
2/6/2015	167.2	2/6/2013	100.2	29.18%
2/9/2015	165.23	2/7/2013	99.89	28.61%
2/10/2015	166.36	2/10/2013	99.29	29.44%
2/11/2015	167.91	2/11/2013	99.21	30.09%

The starting date is 2nd January 2015, right up to 2nd January 2020.

As you can see, I have the latest date and NAV (shaded in blue). Next to this, I have the date and NAV for two years ago (shaded in pale yellow). I have calculated the CAGR against these two NAVs. If I do the CAGR across all the dates, I get a time series of the daily 2-year return starting from 2nd January 2015.

Before we proceed, let us look at this statement about rolling return again – ‘Rolling return gives us a perspective of how the ‘n years’ return (growth) has evolved over the last ‘n years’. Does this sound confusing now?

I hope not ☺

Anyway, one minor thing to note here – look at the 2nd data point, I have NAV for 5th January 2015, but I don't have the NAV for 5th January 2013, but instead have the NAV data for 3rd January 2013, which I've used. As you may have guessed, this happens due to the weekend factor. So I'd suggest you ignore this bit.

Also, at this point, you should realize that if my objective were to calculate the 1-year rolling return, my starting point would be 2014, and if the objective is to estimate three years rolling return, then I would start from 2016.

Now that we have the Rolling Return time series starting from 2015, I can do a couple of things with the data. To begin with, we can calculate the range of returns for the time series we have calculated. To estimate the range, we simply have to calculate the max and min.

Here is the max –

8/13/2015	169.58	8/13/2013	95.33	33.37%	
8/14/2015	172.64	8/14/2013	95.74	34.28%	
8/17/2015	171.93	8/15/2013	95.74	34.01%	
8/18/2015	171.97	8/18/2013	92.41	36.42%	
8/19/2015	172.31	8/19/2013	90.79	37.76%	←----- Max
8/20/2015	169.72	8/20/2013	90.64	36.84%	
8/21/2015	168.19	8/21/2013	89.04	37.44%	
8/24/2015	158	8/22/2013	90.66	32.01%	

And here is the min –

9/13/2019	228.47	9/13/2017	223.84	1.03%	
9/16/2019	227.46	9/14/2017	224.03	0.76%	
9/17/2019	223.65	9/17/2017	223.85	-0.04%	
9/18/2019	223.97	9/18/2017	225.26	-0.29%	
9/19/2019	221.35	9/19/2017	225.68	-0.96%	<---- Min
9/20/2019	232.68	9/20/2017	225.29	1.63%	
9/23/2019	238.56	9/21/2017	224.67	3.04%	
9/24/2019	237.82	9/24/2017	220.39	3.88%	

What does this mean? Well, assume two people invested in the AB Frontline Equity fund. The lucky person invested on 19th August 2013 and pulled out his investment on 19th August 2015. This person makes 37.76%.

The unlucky fellow also invested for two years, but he/she invested on 19th September 2017 and stayed invested till 19th September 2019. Unfortunately, this person lost money!

The point that I'm trying to make is that no two, 2-year returns are the same. The returns change depending on when you choose to invest and when you decide to pull out your investment.

Here is a graph of the rolling 2-year return starting from 2015.



And as you can see, the two-year returns have ranged from 37% to nearly -1.0%. If you were to invest for two years, then your return could have been anywhere within this range.

To get a perspective of the likely 2-year return, you can take an average of the rolling returns; this is called the 'Rolling Return Average'.

The average is 15.35%.

So as you can see, the rolling return gives us a lot more insights compared to a point to point return.

So the next time you want to invest in a mutual fund, as a part of the analysis, include these two things –

1. Identify the period you are interested in investing
2. Find out the historical rolling return min, max, and average for the period

For example, if I'm looking at investing in a large-cap equity fund for seven years, I'll check the historical 7-year rolling return for that particular fund. By doing so, I will get a perspective of historical return range plus its average.

In my opinion, this is much better than looking at a point to point return. By the way, I've used 2 years rolling return as an example. If you are looking at investing in EQ funds, then please consider at least 5 years rolling returns or higher.

In the next chapter, let us discuss other MF metrics that matter.

Key takeaways from this chapter

1. Point to point return gives a perspective of the return only for the two days under consideration
2. Point to point return should not be taken as a generalization of return
3. The rolling return gives a better perspective of the return
4. Rolling return average is a better representation of the returns one can expect

CHAPTER 20

Mutual fund Expense Ratio, Direct, and Regular plans

20.1 – Expense Ratio

In the last chapter, we discussed the ‘Rolling Returns’, and why rolling returns offer a better insight into the return pattern compared to a simple point to point return. Continuing from the previous chapter, we will discuss a few more important metrics related to mutual funds.

In this chapter, we focus on the expense ratio of a mutual fund. Of course, this is the 20th chapter in this module, and I suppose we have mentioned ‘expense ratio’, in passing multiples times. However, we never formally introduced the concept of the expense ratio of a mutual fund. So let us do that before we proceed.

Think about services like Tata Sky, Netflix, Swiggy, or even Dunzo, these are all services that you consume fairly regularly (I assume) and therefore you pay for it. Why would you pay for it? Well, because there is a real cost involved. For example, a Dunzo executive has to ride his bike to the store, pick up the item, deliver the same to your house. So there is fuel, labour, tech, and other expenses involved. Hence we pay a fee to cover for these costs plus a tiny bit extra which adds to the profit of the company.

Likewise, managing your investments in a Mutual Fund is also a service and the service is offered by the Asset Management Company (AMC), and needless to say, you have to pay for it.

The fee mutual fund charges are called, 'The Total Expense Ratio' or TER.

Why do the AMCs charge? Well, they have expenses to bear – custodian fees, Trustee, RTAs, fund managers, admin, brokers, distributors, advertisements, and of course, as a business, they need to be profitable too.

At this point, there are two possible paths available to us – deep dive into what, why, how of TER or get a working knowledge of TER.

I prefer we stick to the later. As a Mutual fund investor, all you need to be aware of is that mutual fund investments are not free, and you have to pay for it.

However, most of the first time investors would like to believe that mutual fund investments are free because they never make an explicit payment to an AMC for the fund management services. In fact, no one explicitly pays an AMC.

The service fee, i.e. the TER is charged in a very convenient and hassle-free manner, so much so that you wouldn't even know you've paid for it J.

As a mutual fund investor, all you need to know is –

- How is the fee charged?
- How much is the fee charged?
- Techniques to save on TER.

I'll use a very simplified example and address these questions. The idea is to give you rough working knowledge on TER and not the exact math behind.

Assume a certain AMC charges a TER of 1%, i.e. a fee of Rs.1,000/- per year for every Rs.1,00,000/- invested. Now, this fee is not collected from you the moment you invest or on a monthly/quarterly/half-yearly or yearly basis. The fee is collected from you daily, without even you being aware of it.

Let me explain –

Rs.1,000/- is the charge on an annual basis. If you do the math, this works out to –

$$1,0000/365$$

$$=Rs.2.73/-$$

So as long as you are invested, Rs.2.73/- is deducted from your funds daily.

The question is, how do they charge and take this money on a daily basis.

Assume the starting NAV of the fund is Rs.10/-. Since you've invested Rs.1,00,000/- you are entitled to receive

$$= Rs.1,00,000/10$$

$$= 10,000 \text{ units.}$$

After you invest, assume the very next day the fund gains 1%. That means, the new NAV is –

$$=10*(1+1\%)$$

$$= 10.1$$

And the value of your investment is

$$= 10.1 * 10,000$$

$$= \text{Rs.}1,01,000/-$$

However, the AMC needs Rs.2.73/- from you as a fee. Hence they will deduct this money from the value of your investment =

$$\text{Rs.}1,01,000/- \text{ minus Rs.}2.73/-$$

$$= \text{Rs.}1,00,997.3/-$$

Or the actual NAV applicable (and declared) is –

$$= \text{Rs.}1,00,997.3 / 10,000$$

$$= 10.09973.$$

Note, the NAV is 10.09973 after deducting the TER. Before TER the NAV is 10.1.

So the point to note is –

- The NAV that is declared is after deducting the TER
- The money is collected from you from your investments
- Money is deducted daily

Now in the example, we worked with the assumption that the value of the investments increases by 1%. Even if the value of the fund decreased, the fund will still go ahead and charge what they are supposed to charge.

Besides, there are plenty of nuances to TER calculation. For instance, SEBI has mandated the maximum TER a fund can levy over an Equity and Debt

fund. SEBI has also proposed a maximum TER proportionate to the fund asset under management for a given scheme. The fund should also consider the weighted average sum of your investments. So as you can imagine, there are many subtleties involved.

There are professional ‘fund accounting’ companies which incorporate the SEBI guidelines and help the AMCs do the math and ascertain the TER on a weighted average basis. As an investor, I don’t think it is necessary to dwell into these technicalities as long as you know much you are paying.

Also, when you are selecting a fund for investment, the TER is not a standalone factor to consider. TER is no doubt important, but just because a fund is charging say 2%, you should not ignore everything else about the fund and decide not to invest.

Yes, if you have to shortlist between two funds of the same type including the return profile, for example, an overnight fund, then it makes sense to look at the fund with a lower TER and invest in it.

Now, here is a snapshot of the UTI Core Equity fund and the TER it charges –

Home > Product > Equity-Funds > UTI Core Equity Fund

UTI Core Equity Fund Equity - Large & Mid Cap Fund Regular Growth Invest

Snapshot

Fund Type: Equity Funds	Returns as of 30 Jun 2020	NAV
Inception: May 20, 2009	1 Year ▼ 16.28%	₹58.2840
Risk Metric: Moderately High	5 Year ▲ 1.4%	as of Aug 17, 2020

Fund Facts As of 30 Jun 2020

Month End AuM : ₹713.20 Cr	Total Expense Ratio : Direct: 2.11 , Regular: 2.39	Exit Load : 1% if less than 1 Year
Monthly Avg. AuM : ₹703.99 Cr	Benchmark Index : Nifty Large Mid 250	
No. of Folio Accounts : 1,71,873	Special Facilities :	
Minimum Investment Amount : ₹5,000	Switch/SIP/Redeem/SWP/STRIP	

As you can see, the fund charges 2.11% for Direct plan and 2.39% for the regular plan.

Now the obvious question – what is the difference between direct and regular plan and why two different TER for these funds.

20.2 – Direct and Regular plans

If you are a 90's kid, growing up in Bangalore, then you'd probably remember a few ice cream brands – Vadilal, Dollops, Kwalita, and Joy. My favourite was Joy Ice cream, not because it was any different than Vadilal, but because the Joy Ice cream factory was 500 meters from my house.

It was a small factory with a little retail outlet at the factory's entrance. At this factory-owned retail outlet, a choco bar stick was sold at Rs.14/- whereas the same was sold at Rs.18/- in a shop called 'Anu stores', which still is about 1km away. Whenever my parents felt generous, they would give me some money to buy ice creams; I'd run to the factory retail shop and pick up a couple of ice cream sticks for the family. While the kids were happy with the ice cream, my folks were happy with the savings.



Good old days 😊

Now, why do you think the factory sold the ice cream at Rs.14/- while Anu stores sold the same ice cream at Rs.18?

Well, because the owner of Anu stores needed an incentive to sell Joy ice cream. Without the incentive, why would anyone sell a product, right? That's the reason Joy Ice cream as a company would mark up the price to include the shop owners incentive and sell the choco bar at Rs.18/-.

However, at the factor's retail outlet, there is no incentive because the Joy Ice cream as a company would make whatever it had to make by selling the ice cream directly to the customer at Rs.14/-.

I suppose this is a simple business model to understand.

Same goes with Mutual Funds.

You can choose to buy Mutual Funds in two ways –

- From the AMC directly
- Via a distributor

When you buy a mutual fund directly from the AMC, it is called a 'Direct' transaction. The direct transaction is comparable to me buying the ice cream from the factory owned retail outlet.

However, if you buy a mutual fund from a distributor, then it is comparable to buying the ice cream from Anu stores.

Now the seller of a regular mutual fund needs an incentive to sell the mutual fund; hence the AMC marks up the TER and passes the additional TER to the distributor and the distributor network. Hence, for any given fund, the TER or the expense ratio for a regular fund will always be higher compared to the direct fund.

Which leads us to an important point – every mutual fund scheme is available in two avatars or two plans –

- Direct Plan
- Regular Plan

While everything remains the same, only the TER changes. Have a look at the snapshot below; I've taken this from HDFC AMC website –

HDFC plans and option

Plan/Name	NAV Date	NAV Amount [₹]
HDFC Top 100 Fund - Growth Option - Direct Plan	11 Aug, 2020	481.1880
HDFC Top 100 Fund - Growth Plan	11 Aug, 2020	488.4600

As you can see above, we are looking at the HDFC Top 100 Fund (Growth). There are two variants available to you – Direct and regular. The first in the list is the direct plan, where they have explicitly mentioned that it is a direct plan. The second in the list is the regular plan. The AMC has not explicitly mentioned that it is a regular plan, but is implied.

The TER for both these funds is different. Here is the snapshot –

Total expense ratio (As on July 31, 2020)

Regular	Direct
1.78%	1.28%

Including Additional Expenses and Goods and Service Tax on Management Fees, if any.

[Click here](#) to view the Total Expense Ratio

The TER for Direct is 1.28%, and Regular is 1.78%. The additional TER of 0.5% in the regular fund is to ensure the distributor is adequately compensated for selling the Mutual Fund.

It is very important to comprehend the fact that the TER is paid by you, i.e. the investor to the AMC and therefore the distributor.

When you buy from the AMC directly, there is no distributor, hence no distributor commission, hence lesser TER. The lesser the TER, the higher the returns for you.

At this stage, you may be clear about the fact that the TER for regular funds is higher compared to its direct counterpart. You may have also understood the fact that the fund is the same – same strategy, same portfolio, same fund manager, same risk, etc., but the TER or the expense ratio is different.

The difference in TER is mainly to incentivize the Mutual fund agent or the mutual fund distributor to sell the AMC's fund. You may have a couple of questions by now –

- Who are these 'MF agents or distributors' trying to convince you to buy regular plans?
- Why would anyone opt for regular funds given that these have higher TER?
- If the two funds are same, then why is the NAV of direct fund higher compared to the NAV of the regular fund (refer to the snapshot above)

The MF agents could be your local bank manager or that annoying uncle who always turns up on Sunday mornings to try to sell some 'financial scheme'. The distributor could be an online website as well, where you buy the mutual fund yourself.

Regardless of who the distributor is, you need to remember that when you buy a regular MF, you are paying a higher TER fee.

Does that mean buying a regular plan and paying a higher TER is bad?

Well, no.

If you know nothing about Mutual fund investment, and you need help with this, then you should opt for an advisor who will advise and keep track of everything on your behalf (markets, MF performance, rebalancing etc.). Under such a circumstance, it makes sense to buy a regular MF from the agent to compensate him or her for the advisory work and the continuous hand holding services.

However, if you are comfortable dealing with Mutual funds (which hopefully is the case because you are reading this module), then it does not make sense to opt for a regular fund. You are better off investing in a direct fund and save on costs.

Hopefully, this explains who these distributors are and why one should opt or not opt for regular funds.

The last question, i.e. why the NAV of direct funds is higher compared to a regular fund is perhaps the most asked question.

The confusion is this – the NAV of the regular fund is lesser. Hence the units are available for a cheaper price, why pay more for the direct fund given the fact that the NAV for direct funds is higher.

For example, look at the NAVs for HDFC Top 100 fund –

- Direct plan NAV is 460.5
- Regular plan NAV is 438.4

The difference is almost Rs.22/- per unit. It is only natural to want to buy the regular fund considering it is cheaper.

Well, the problem is in the way we perceive the NAV. If you look at NAV as a price you pay to acquire the mutual fund, then, yes, the regular fund NAV looks cheaper, and it seems like a smart decision to pay a lesser amount and buy the regular plan.

However, if you look at the NAV not as an asset price, but rather as the value of an asset, then you will soon realise that the regular plan is less valuable

compared to the direct plan. After all, the NAV stands for 'Net Asset Value', and not 'Net Asset price', I hope you get the subtle difference 😊

Think of NAV as of the latest value of the asset you've acquired.

In the next chapter, we will continue to discuss a few more mutual fund metrics.

Key takeaways from this chapter

- Investment in Mutual fund is not free; there is a fee applicable.
- The applicable fee is called the 'Total Expense Ratio' or simply the expense ratio
- The TER is expressed as an annual percentage charged
- The TER is charged daily
- The NAV that is declared is posted TER deduction
- For a given fund, TER for the direct plan is lesser compared to the regular plan
- For a given fund, the NAV for the regular plan is always lesser compared to the direct plan

CHAPTER 21

Mutual Benchmarking

21.1 – TER savings

I probably should have discussed this in the last chapter itself, but don't know why (and how I missed it). While we discussed TER, Direct, and Regular plans, I should have perhaps given you an indication of how much one can save by opting for a direct plan. So before we discuss mutual fund benchmarking, let's quickly address the savings bit. Also, this is my last attempt to convince you to switch to direct MF investment as opposed to regular MF.

You can do this little experiment yourself.

Pick any Mutual fund of your choice. I've picked IDFC Core Equity Fund, Growth. Arbitrarily assume a starting date and a SIP amount, I've picked Rs.10,000/- as the monthly SIP amount, starting from 1st Jan 2014. I further assumed that the SIP is continued over five years, i.e. till 1st Jan 2020.

I've used a standard SIP calculator (I've used the one on Moneycontrol) to see the performance of the SIP in this fund. Here is the result –

Mutual Fund:	IDFC Mutual Fund
Scheme:	IDFC Core Equity Fund - Regular Plan (G)
Investment Amount (Rs):	10000
SIP Frequency:	Monthly
SIP Date:	start 2014-01-01 end 2020-01-01
CALCULATE	
SIP Investment Returns (CAGR*): 8.84%	

*Compounded Annualised Growth Rate

IDFC Core Equity Fund - Regular Plan (G)

Investment Period	Jan 01, 2014 to Jan 01, 2020
No of Investments	73
Total Amount Invested (Rs)	730,000.00
Total Units Purchased	20,772.43
Investment Value as on Jan 01, 2020	952,000.56
NAV as on Jan 01, 2020	45.83000

There are a couple of things you will notice here –

1. The CAGR (or XIRR to be particular) is 8.84%
2. The total amount invested is Rs.7,30,000/- across 73 months.
3. The total number of units acquired is 20,772.43
4. The value of the investment after 73 months of regular investment is Rs.9,52,000/-

This is a reasonably standard SIP performance. Now, repeat the same activity with the same fund, but in the direct option, i.e. IDFC Core Equity Fund, Direct, Growth.

Here is how the performance looks like –

Mutual Fund: IDFC Mutual Fund
Scheme: IDFC Core Equity Fund - Direct Plan (G)
Investment Amount (Rs): 10000
SIP Frequency: Monthly
SIP Date: start 2014-01-01 end 2020-01-01
CALCULATE

SIP Investment Returns (CAGR*): 10.47%

*Compounded Annualised Growth Rate

IDFC Core Equity Fund - Direct Plan (G)

Investment Period	Jan 01, 2014 to Jan 01, 2020
No of Investments	73
Total Amount Invested (Rs)	730,000.00
Total Units Purchased	19,982.55
Investment Value as on Jan 01, 2020	999,527.40
NAV as on Jan 01, 2020	50.02000

Contract the performance of the direct option with the regular option. I've tabulated this for you so that it's easy for you to compare –

Particular	Direct	Regular	Difference
Starting Date	1st Jan 2014	1st Jan 2014	-
Ending Date	1st Jan 2020	1st Jan 2020	-
SIP Amount	Rs.10,000/-	Rs.10,000/-	-
Frequency	Monthly SIP	Monthly SIP	-
Months invested	73	73	-
Units accumulated	20772.43	19982.55	-
Total amount invested	7,30,000	7,30,000	-
Latest value of investment	9,99,527	9,52,000	47,527
XIRR	10.47%	8.84%	1.63%

In the direct fund, you would have accumulated 19,982 units, slightly lesser than regular funds. But do recall from the previous chapter, the value of units in direct funds is always much higher compared to the regular fund.

As you can see, the investment value in direct is Rs.9,99,527/- versus the value of Rs.9,52,000/- in the regular fund.

The difference is Rs.47,527/- or about 6.51% when compared to the initial investment amount. Where do you think this money is going?

Well, the money is going to the distributor for having advised you to start a 10,000/- SIP five years ago.

Now obviously in the direct fund, the distributor does not make this commission. Hence the returns are higher, this is quite evident when you look at the XIRR as well – 10.47% Direct Fund XIRR versus Regular plan's 8.84%.

Which implies, that every year you end up paying 1.63% of your investment value as commissions.

Do yourself a favour, and please switch to direct funds 😊

21.2 – Benchmarking and TRI

Moving forward, I guess we need to spend some time to discuss the concept of 'Benchmarking', in mutual funds.

Benchmarking, in the mutual fund world, is used to measure the performance of a fund. To put this in perspective, think about an aspiring athlete, say a runner named 'X'.

X is practising hard for an upcoming running event. X's main plan is to not only win the 100 meters race but also beat 'Y', another aspiring runner from the neighbouring town.



Now, in the practice run, X clears the 100-meter track in 14.5 seconds. Do you think he is in a good position to win the race?

It would be hard to say unless we know how much time Y takes to clear the same track, right? Assume, Y takes 13 seconds.

Now, who is likely to win the race? Y, right?

We were able to answer (or predict) this because we could benchmark both X and Y against each other. If we knew the speed of X or Y without knowing the other person's running speed, then we couldn't estimate who is likely to win the race.

This is called benchmarking. Benchmarking allows us to measure performance.

The same goes with Mutual Funds.

Every mutual fund sets itself against a benchmark and aims to beat that benchmark in terms of returns generated.

DSP
MUTUAL FUND

Mutual Funds home >

DSP
Equity Opportunities Fund Regular - Growth ▾

Risk: Moderately High Risk ⓘ	Age: 20 years 3 months since May 16, 2000
AUM: ₹ 4,889.15 crores as of Jul 31, 2020	Horizon: Long-term Horizon
Goal: Capital Appreciation	Benchmark: NIFTY LargeMidcap 250 (TRI)

In the snapshot above, we can see that DSP's Equity Opportunity Fund, benchmarks itself against the Nifty 250 Index (TRI).

For example, a large-cap equity fund benchmarks itself against the Nifty 50 Index. The idea here being that the large-cap fund should beat the index in terms of returns generated on any timeframe you choose to measure – it could be 3, 5 or 10 years. In general –

1. The MF generates higher returns than the benchmark; then the fund is said to outperform
2. The MF generates lower returns compared to the benchmark; then the fund is said to have under-performed

To put this in context, assume an Equity fund generates 12% CAGR across three years while its benchmark, i.e. Nifty 50 generates 10.5% for the same period. In this case, the fund is said to have outperformed. The excess return with respect to the benchmark is called the 'Alpha'.

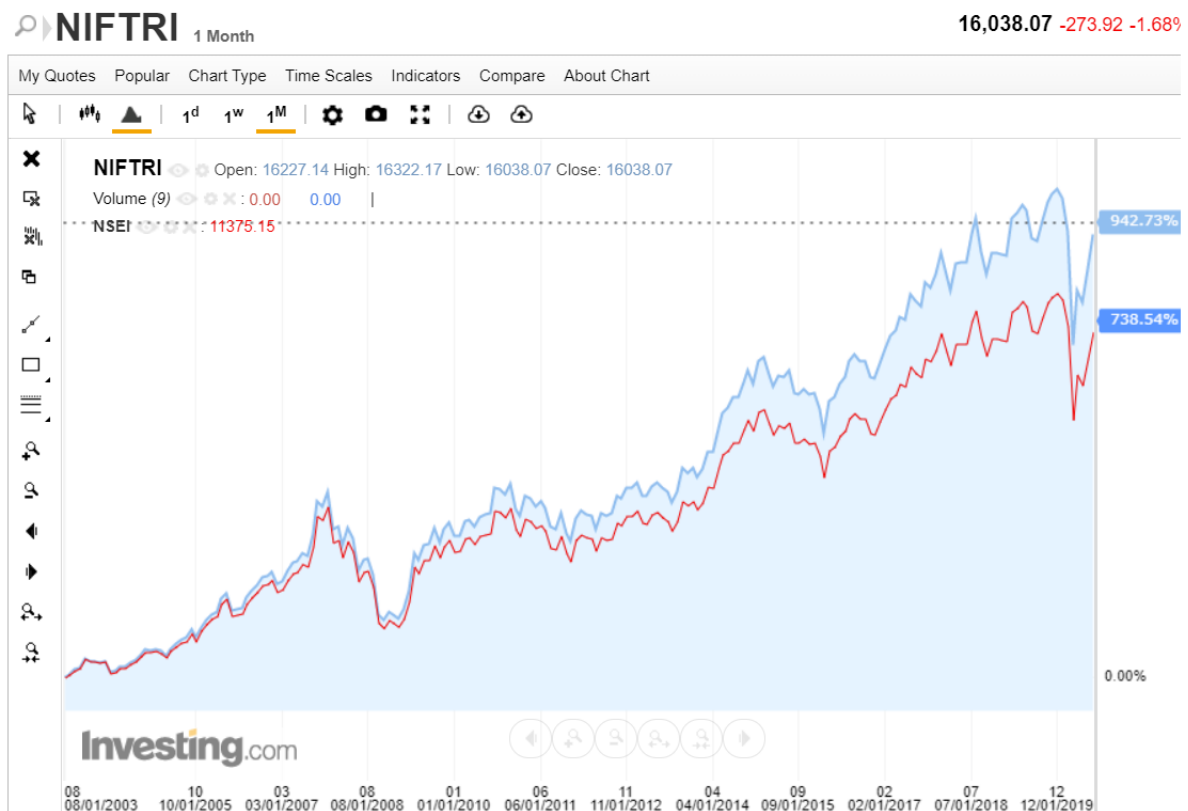
In this case, the Alpha is 1.5% i.e. $12\% - 10.5\%$.

By the way, in the snapshot above, you must have noticed the 'TRI' bit. TRI stands for Total Return Index. The total return index includes and factors in for dividends as well. Remember, when you buy a stock of a company, there are two sources of income –

1. Price appreciation or capital gains
2. Dividend income

Now, think about the regular index chart that all of us check. This chart captures only the price appreciation of the index. It does not capture the dividends issued by the index constituents. To get a sense of real returns an investor earns, one has to factor in for the dividends received by the company. The total returns index (TRI) captures this. So when we look at the Nifty 50 chart, we are essentially looking at just the price appreciation chart, but when we are looking at the Nifty 50 TRI, we are looking at both price appreciation, and the dividends received.

Have a look at a comparison of Nifty 50 and Nifty 50 TRI, the blue line is TRI and red is Nifty 50 –



For the same period, TRI has posted an absolute return of 942% while the Nifty 50 has posted 738%. The reason why I'm talking about this to let you know three things –

1. For an index, its TRI avatar is always more valuable since it factors in dividends.
2. MF's use TRI as a benchmark; this is a recent phenomenon though. Earlier, MFs were benchmarking against just the price appreciation chart.
3. It's not easy to beat the TRI index. 😊

Alright, now that we have laid a foundation for our discussion for benchmarking, let's take this discussion a bit deeper.

21.3 – Weights matter

Consider this, there are two mutual fund managers, A & B.

A manages a large-cap fund and benchmarks his funds with Nifty 50 TRI. B manages an Equity multi opportunity fund and benchmarks his funds against Nifty 500 TRI.

Which mutual fund manager here do you think will have a tough time beating their benchmark?

Nifty 50 has 50 large-cap stock, while Nifty 500 has not only the 50 stocks from Nifty 50 but an additional 450 stocks.

Intuitively, it feels as if beating the Nifty 500 TRI seems like a more challenging task. After all, Nifty 500 is diversified, has more stocks, lesser volatility, and therefore drawdowns are contained.

Well, but it's not. The reason for this is interesting. Let me explain this.

Imagine you have created an imaginary index, call it the 'High 5' index. High five consists of the top 5 stocks across five different sectors. The constituents of the index are as follows –

Stock	Sector	Weights	Today's stock price	Base Split
Biocon	Pharma	10%	421	100
Reliance	Oil & Gas	20%	2,099	200
TCS	IT	17%	2,330	170
Exide	Auto	35%	161	350
Bajaj Auto	Auto Ancillary	18%	2,903	180
Total		100%		1000

Each stock has a certain weight in the index. The starting value of the index is 1000; the Base Split column shows you the split of 1000 according to the weight of the individual stocks in the index.

With this, assume you start your index. After a few days, the stock prices have changed, which means the index value also varies. I've randomly assigned stock price values to the High five index stocks –

Stock	Sector	Weights	Today's stock price	Initial Base	Growth	New Base values
Biocon	Pharma	10%	445	100	5.70%	105.70
Reliance	Oil & Gas	20%	2,200	200	4.81%	209.62
TCS	IT	17%	2,600	170	11.59%	189.70
Exide	Auto	35%	180	350	11.80%	391.30
Bajaj Auto	Auto Ancillary	18%	2,990	180	3.00%	185.39
Total		100%				1,081.72

As a virtue of the change in stock price, the individual base values change, hence the entire index changes. Given the stock price changes, the overall index value changes, and as you can see, the index changed from 1000 (starting price) to 1,081.72, representing an absolute return of 8.17%.

Now, let's not change anything in the high five indexes, let the stocks remain the same, the reference stock prices will stay the same, and even the starting value of the index remains the same.

We will only change the weights assigned to individual stocks and see what happens to the index values. Have a look at the snapshot below –

Stock	Sector	Weights	Today's stock price	Initial Base	Growth	New Base values
Biocon	Pharma	20%	445	200	5.70%	211.40
Reliance	Oil & Gas	20%	2,200	200	4.81%	209.62
TCS	IT	5%	2,600	50	11.59%	55.79
Exide	Auto	15%	180	150	11.80%	167.70
Bajaj Auto	Auto Ancillary	40%	2,990	400	3.00%	411.99
Total		100%				1,056.51

As you can see, the weights have changed. For example, initially, the value assigned to Biocon was 10%, which is not increased to 20%, Bajaj Auto was changed to 40% from 18%. Likewise for other stocks as well.

With the change in weights, look at the new base value, that too has changed from 1,081.72 to 1,056.51. With no shift in stocks, but with a change in weights, the returns have decreased to 5.65% from 8.17%.

What does this mean?

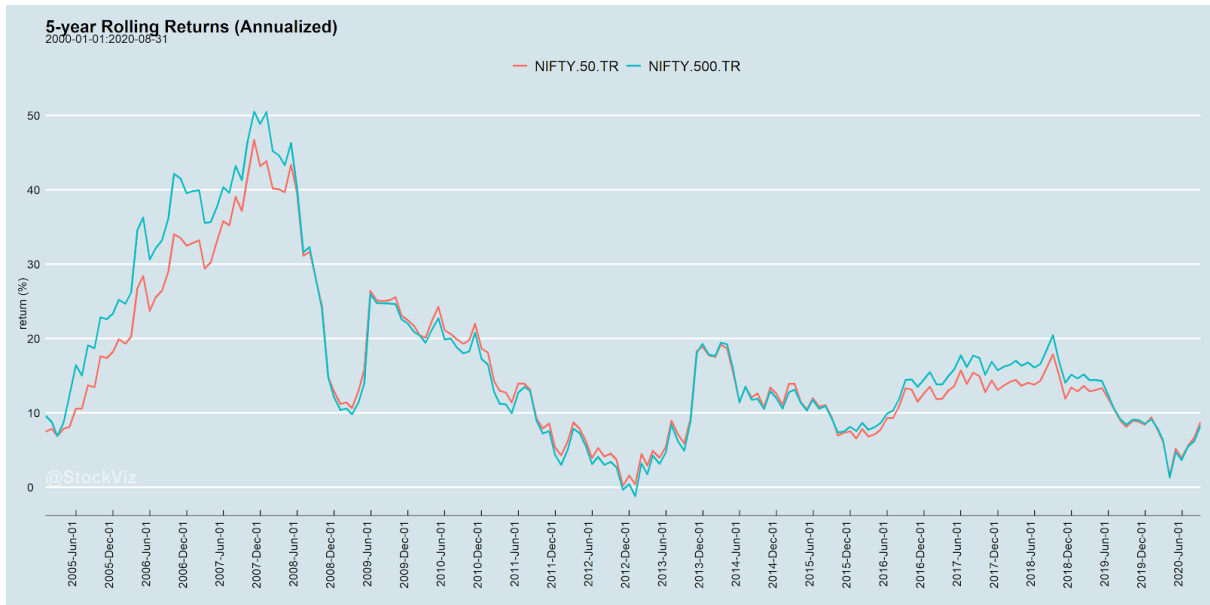
This means that the weights you assign to the stocks within an index matter the most. Whether you have 50 stocks or 500 stocks in the index is pointless, what you need to look at is the weights assigned to each stock.

For example, in Nifty 500, the top 10 stock has a weightage of nearly 45%, the top 25 has a weightage close to 65%, top 50 has nearly 85-90% of the weightage.

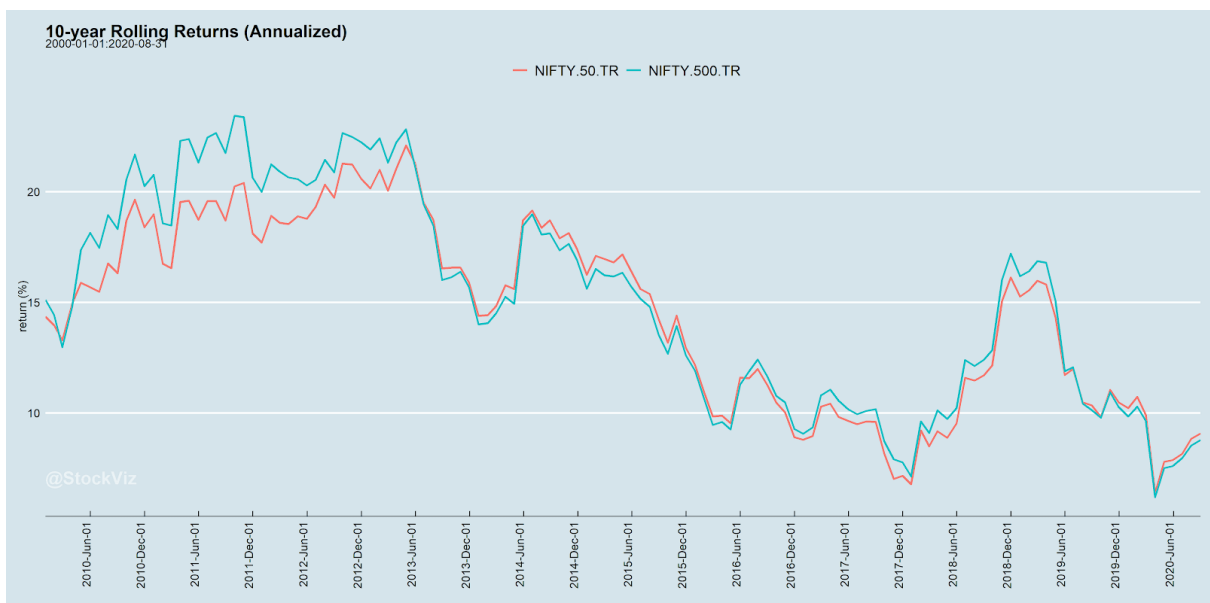
The rest 450 stocks exist, for the sake of it. 😊

To put this in a more meaningful context, do check the rolling returns of Nifty 50 TRI and Nifty 500 TRI.

The chart below is the 10-year rolling return of both Nifty 50 TRI and Nifty 500 TRI starting from 2005 –



And the one below is the 5-year rolling return –



The graphs are generated by my good friend, Shyam from Stockviz.

It's remarkable how similar these return/drawdown profiles are. There was some divergence between Nifty 50 and Nifty 500 from 2005 to 2007, but that quickly disappeared. Since then the returns have been relatively similar

across both these indices. Again, indicating the fact that the additional 450 stocks in Nifty 500 make very little difference.

While I've not discussed other indices such as Nifty 100 or Nifty 250, you can expect something similar.

So the question is – what difference does it make if the benchmark is Nifty 50 TRI or Nifty 500 TRI?

Well, nothing.

What does this mean to you as a mutual fund investor? I suppose some of you are reading this may have figured this out already.

Don't worry too much about MF benchmarking. You as an investor, should develop a sense of realistic return expectation from your MF investments. That realistic return expectation should serve as your benchmark for the investment and not the one assigned by the AMC.

Everything else is noise according to me.

Naturally, this further boils down to setting realistic return expectations in life. For example, if you've predominantly invested in a large-cap fund, then you should expect large-cap kind of results and not small-cap kind returns.



Having said that, if the fund you've invested in is under-performing the index consistently then that is not a good sign either. Under such circumstances, you may want to consider a review or even change of fund.

Your ability to analyse a fund and set realistic return expectations from your investment eventually defines you as an MF investor. The focus over the next

few chapters will be on his, i.e. to identify your personal financial goals, build an MF portfolio, and set yourself a realistic expectation.

The next chapter, we will try and conclude our discussion on Mutual fund metric and then proceed to goals and portfolios.

Stay tuned.

Key takeaways from this chapter

- Benchmarks help you get a perspective of performance.
- Most mutual funds benchmark themselves against TRI, which is the total returns index.
- TRI captures the effect of dividends.
- The returns of the index largely depend on the weights assigned to each of the index constituents.
- TRI returns of Nifty 50, and Nifty 500 is mostly similar.
- You need to set realistic return expectations and set that as a benchmark.

CHAPTER 22

Mutual Fund Beta, SD, and Sharpe Ratio

22.1 – Beta

Over the last few chapters, we discussed various attributes of a mutual fund. We will continue the same in this chapter and focus on key risk measures of a mutual fund. Risk measures include various attributes such as –

- Beta
- Alpha
- Standard Deviation
- Sharpe Ratio

We will start with the beta.



One of the key attributes of the mutual fund is the ‘beta’ of the fund. The beta of a mutual fund is the measure of relative risk, expressed as number; Beta can take any value above or below zero. Beta gives us a perspective of the relative risk of the mutual fund vis a vis its benchmark.

I’ll not get into the details of how beta is calculated, I’ve done that in the Future’s module. Here is the link if you are interested to know the math behind –

<https://zerodha.com/varsity/chapter/hedging-futures/>

Section 11.5 of this chapter discusses the beta in detail. For this chapter, I’ll restrict myself to the application of beta and how you need to use this number. Have a look at the snapshot below –

Risk Measures (%)						
	Mean	Std Dev	Sharpe	Sortino	Beta	Alpha
Fund	--	--	--	--	--	--
S&P BSE 500 TRI*	6.34	21.82	0.06	0.06	--	--
Equity: Multi Cap*	5.86	21.39	0.04	0.04	0.95	-0.43
Rank within category	--	--	--	--	--	--
Number of funds in category	--	--	--	--	--	--

I’ve captured this from Value research; these attributes belong to Tata Multicap fund. As you can see, the fund is benchmarked against S&P BSE 500 TRI.

I’ve highlighted the beta of the fund, which is 0.95. Like I mentioned earlier, beta gives us a measure of the relative risk of the fund. In general,

If the beta of a mutual fund is less than 1, then the fund is perceived as less risky compared to its benchmark. For example, the Tata Multicap fund has a

beta of 0.95, hence the fund is slightly less risky compared to its benchmark. I say **slightly** because it's very close to 1. This implies, if S&P Sensex 500 falls by 1%, then Tata Multicap fund is expected to fall by 0.95%.

If the beta was 0.6 or 0.65, the fund is less risk or less volatile compared to its benchmark. Why? Because if S&P Sensex 500 falls by 1%, then Tata Multicap fund is expected to fall by only 0.65% and not 0.95%.

This is what I mean by 'relative risk'; it gives us a perspective of how risky the fund is compared to its benchmark.

Now, if the beta of a mutual fund is equal to 1, then it means the fund is as risky as its benchmark. For example, if the benchmark falls by 1%, the fund is expected to fall by 1%. So both the benchmark and the fund are expected to have similar risk profiles.

Lastly, if the beta of the fund is higher than 1, it implies that the fund is riskier compared to its benchmark. For instance, a beta of 1.2 suggests that the fund is 20% riskier compared to its benchmark. If the benchmark falls by 1%, the fund is expected to fall by 1.2%.

When you are looking at the Beta of a stock or an MF, it is very important to recognize the fact that the beta is a measure of relative risk, it tells us how risky the stock or MF is compared to its benchmark. Beta is not an indicator of the inherent risk of the stock or MF.

To put this in context, think about it this way, Ferrari is faster compared to a BMW, this comparison is like the beta. We measure the speed of car one against car two. But does this give you any indication of how fast the Ferrari is? Not really.

Likewise, while beta gives us a perspective of the relative riskiness of an asset, it does not give us the absolute or the inherent risk of the asset itself.

By now, you must have built your perception of beta. Let me ask you this – if a mutual fund has a high beta, do you think it is bad?

Well, the good, bad, ugly part of beta depends on another metric called the **‘Alpha’**.

22.2 – Alpha

In the previous chapter, we briefly discussed alpha. We defined alpha as the excess return of the fund over and above the benchmark returns. Well, that is true, but we need to make a few small changes to that equation and include our newly introduced friend, beta. To understand alpha, we need to understand the concept of ‘Risk-free’ return. The risk-free return is the maximum return you can generate without taking any risk. By risk I mean – market risk, credit risk, interest rate risk, and unsystematic risk.

There are two return sources which fit in the above definition – (1) The return from the savings bank account (2) The fixed deposit return.

Of course, we can argue that the banks too are not safe and come with some degree of risk. Understandable, but let’s keep that argument aside for this discussion 😊

Or if you are a stickler for definitions, let us stick to the treasury bills, issued by the Govt of India. The treasury bills have an implicit sovereign so it's deemed safe.

Money Market	
Call Rates	: 1.80% - 4.00% *
* as on previous day	
Government Securities Market	
5.77% GS 2030	: 6.0571% #
5.79% GS 2030	: 6.0665% #
5.22% GS 2025	: 5.4169% #
6.18% GS 2024	: 5.2937% #
5.09% GS 2022	: 4.1806% #
91 day T-bills	: 3.3578%*
182 day T-bills	: 3.5779%*
364 day T-bills	: 3.7312%*

The T bill rates as of today are roughly about 3.75%, and let us keep 4% for convenience.

Alpha is defined as the excess return of the mutual fund over the benchmark return, **on a risk-adjusted basis.**

Risk-adjusted basis means we need to –

- Calculate the difference between the mutual fund returns and the risk-free return
- Calculate the difference between the benchmark return and the risk-free return, multiply this by the beta
- Take the difference between 1 and 2

Mathematically,

Alpha = (MF Return – risk free return) – (Benchmark return – risk free return)*Beta

Let's put this in context with an example. Assume a certain fund gives you a return of 10%, its benchmark returns for the same duration is 7%. The beta of the fund is 0.75. What do you think of the alpha assuming the risk-free rate is 4%?

Let's apply the for formula and check –

$$\text{Alpha} = (10\% - 4\%) - (7\% - 4\%) * 0.75$$

$$= 6\% - 2.25\%$$

$$= 3.75\%$$

As you can see, the alpha is not just the difference between the fund and its benchmark, which if true, the alpha would have been –

$$10\% - 7\%$$

$$= 3\%$$

But rather, the alpha is 3.75%.

Now, many of you may not find this intuitive. You may question where the additional 0.75% comes from.

Well, think about it, the fund has managed to generate a 10% return compared to the Index's 7% while managing to stay significantly less volatile (remember beta is just 0.75). Hence we are rewarding the fund for its good behaviour or less volatile behaviour. Therefore the alpha is 3.75% as opposed to just 3%.

Now, imagine the same fund, with the same returns, but the beta is 1.3 instead of 0.75. What do you think is the alpha?

By now, you should guess that since the beta is high, the fund gets penalised for its erratic behaviour. Therefore the alpha should be lower.

Let us see if the numbers agree to this thought.

$$\text{Alpha} = (10\% - 4\%) - (7\% - 4\%) * 1.3$$

$$= 6\% - 3.9\%$$

$$= 2.1\%$$

See that? While the returns remain the same, thanks to beta, the alpha is significantly lesser on a risk-adjusted basis.

To conclude, alpha is the excess return of the fund over above the benchmark returns. Alpha is risk-adjusted. The fund is rewarded if the returns are generated by keeping a low-risk profile and penalized for being volatile.

By now, you must have realized that volatility plays an important role in measuring mutual funds performance. Beta is a measure of volatility; it tells us how risky the fund is when compared to its benchmark. Beta is a relative risk and does not reveal the fund's inherent risk.

The inherent risk of a fund is revealed by the 'Standard Deviation' of the fund.

22.3 – Standard Deviation (SD)

I've explained the concept of 'Standard Deviation' in details here –

<https://zerodha.com/varsity/chapter/understanding-volatility-part-1/>

I'd suggest you go through that entire chapter to understand the concept of standard deviation and volatility. This will help you not just in your MF investments, but also investments in stocks.

I'll take the liberty of skipping the explanation of standard Deviation since it's already explained. However, if you are in no mood to read an entire chapter to figure out the standard Deviation, then here is your shortcut –

- The standard deviation of a stock or a mutual fund represents the riskiness of the stock or the mutual fund
- Standard Deviation is a percentage, expressed as an annualised figure
- Higher the standard Deviation, higher is the volatility of the asset.
Higher the volatility, higher is the risk.

For example, consider these two funds –

Snapshot	Returns	Portfolio	Risk Stars	NAV Details	Fees & Details			
Fund Name	Fund Risk Grade	Fund Return Grade	Standard Deviation	Sharpe Ratio	Sortino Ratio	Beta	Alpha	B-Squared
Axis Long Term Equity Dir: Invest Choice	Low	High	19.33	0.20	0.02	0.64	1.24	0.08
Axis Small Cap Dir: Invest Choice	Low	Above Average	23.95	0.24	0.26	0.74	11.58	0.68

I've taken the snapshot from Value research. The funds under consideration are the Axis Small-cap fund and Axis long term equity.

The SD of the small-cap fund is 23.95% while the long term equity is 19.33%, which implies that the small-cap fund is way riskier compared to the long term equity fund.

To put this context, if you invest Rs.10,000/- across funds at the same time, then by the end of the year the profit or loss can be anywhere in this range –

Fund	SD	Loss	Gains
Axis long term Equity	19.33%	8,067	11,933
Axis small cap	23.95%	7,605	12,395

Loss = Investment * (1-SD)

Gains = Investment * (1+SD)

The larger the SD, the larger the possibility of loss or gains.

Generally speaking, the SD for mid and small-cap funds are higher compared to large-cap stocks.

Do note, volatility or Standard Deviation should not worry you. Markets are volatile, and equities are volatile, mutual funds are volatile; this is the very nature of markets. So if you can't fathom watching your investment see-saw between gains and loss, then perhaps you should reconsider your investment decision inequities.

But if you do invest in equities, then you need to learn to manage volatility.

There are two ways to deal with this beast called 'Volatility' –

- Diversify smartly (and not over diversify)
- Give your investment time

I think that time is the ultimate antidote against volatility. Give your investments time, and time will take care of volatility. All along with this module, I've stressed the importance of giving your MF investments time, and this is the reason why I've stressed on it.

Anyway, while at it, check the Alpha and Beta of both these funds. Few observations –

- The beta of both the funds is sub 1, which means compared to their benchmark they are relatively less risky. But how risky are they individually? We can answer this by looking at the SD
- Alpha is a positive number for both the funds, which is a good thing. The Alpha for Axis small-cap fund is quite impressive. I'd guess this is because of the low beta factor plus the low risk-free return prevailing in the economy.

I hope the risk parameters are starting to make sense to you. We will now shift focus to another parameter called the 'Sharpe Ratio'.

22.4 – Sharpe Ratio

Sharpe Ratio is one of the most sacred formulas in Finance. It was invented by Willam F Sharpe, an American Economist in the year in 1966. He was awarded the Nobel prize in 1990 for his work on the Capital asset pricing model.

Assume, there are two large-cap funds -Fund A and Fund B. Here is how they have performed in terms of returns –

Fund A – 14%

Fund B – 16%

Which of the two funds are better? Well, Fund B has a higher return, so without a doubt, Fund B is a better fund.

Now, consider the following –

	Fund A	Fund B
Return	14%	16%
Risk	28%	34%
Rf	6%	6%

Rf is the risk-free return. Along with the fund's return, I've also stated the standard deviation/volatility/risk of the two funds. Now, which of the two funds do you think is better?

I guess it gets a little complex to figure out which these two funds are better given that we have to evaluate them on two parameters, i.e. both the risk and return.

Ignoring the risk, purely on a return basis, Fund B is better. Ignoring the return, purely on a risk basis, Fund A is better. But in reality, you cannot isolate risk and reward; you need to factor in both these and figure out which of these two are better.

The Sharpe Ratio helps us here. It bundles the concept of risk, reward, and the risk-free rate and gives us a perspective.

Sharpe ratio = [Fund Return – Risk-Free Return]/Standard Deviation of the fund

Let's apply the math for Fund A –

$$= [14\% - 6\%] / 28\%$$

$$= 8\%/28\%$$

$$= 0.29$$

The number tells us that the fund generates 0.29 units of return (over and above the risk-free return) for every unit of risk undertaken. Naturally, by this measure, the higher the Sharpe ratio, the better it is as we all want higher returns for every unit of risk undertaken.

Lets see how this turns out for Fund B –

$$= [16\% - 6\%] / 34\%$$

$$= 10\% / 34\%$$

$$= 0.29$$

So it turns out that both the funds are similar in terms of their risk and reward perspective. And there is no advantage of choosing Fund A over Fund B.

Now, instead of 34% standard deviation, assume Fund B's standard Deviation is 18%.

$$[16\% - 6\%] / 18\%$$

$$= 10\% / 18\%$$

$$= 0.56$$

In this case, Fund B is a better choice because Fund B generates more return for every unit of risk undertaken.

Do note, Sharpe ratio considers only price based risk. It does not consider credit or interest rate risk. Hence, there is no point looking at the Sharpe ratio for debt funds.

In the next chapter, I'll discuss the Sortino's ratio and the Capture ratios and conclude our discussion on Mutual Fund risk parameters and then shift focus on building Mutual Fund portfolios.

And I promise I'll put up the next chapter quickly 😊

Key takeaways from this chapter

- Beta measures the relative risk of the fund compared to its benchmark
- Higher the beta, higher is the relative risk
- Beta is not an indicator of the inherent risk of the fund
- Alpha is the excess return over and above the benchmark return on a risk-adjusted basis
- Higher the beta, lower is the alpha and vice versa
- The standard Deviation measures the riskiness of the fund. Higher the SD, higher is the volatility of the fund
- Share ratio measures the unit of return earned for every unit of risk undertaken
- Higher the Sharpe ratio, better is the fund.

CHAPTER 23

Sortino and the Capture Ratios

23.1 – The Sortino's Ratio

In this chapter, we will discuss two other ratios related to the mutual fund performance/risk measures, i.e. the Sortino Ratio and the Capture Ratios. These are fairly easy to understand, so we will try to keep this chapter as a short note.

We discussed the Sharpe Ratio in the previous chapter. The formula, if you remember looks like this –

Sharpe ratio = [Fund Return – Risk-Free Return]/Standard deviation of the fund

I want you to think about the denominator. The denominator has 'Standard Deviation', which, as you know, is an assessment of risk.

What sort of risk?

Well, we are talking about the risk of the returns varying from the average expected returns. Read that line again; we are defining risk as to the variation (or the variance) from the average expected returns. The variance can be both positive or negative.

Let me explain, have a look at the image below –

Date	NAV	Daily Rt	Excess Rt
03-08-2020	222.22		
04-08-2020	224.96	1.23%	1.13%
05-08-2020	225.46	0.22%	0.11%
06-08-2020	227.43	0.87%	0.77%
07-08-2020	227.71	0.12%	0.02%
10-08-2020	230.02	1.01%	0.91%
11-08-2020	230.8	0.34%	0.23%
12-08-2020	230.56	-0.10%	-0.21%
13-08-2020	230.98	0.18%	0.07%
14-08-2020	228.71	-0.98%	-1.09%
17-08-2020	230.15	0.63%	0.52%
18-08-2020	233.06	1.26%	1.16%
19-08-2020	233.78	0.31%	0.20%
20-08-2020	232.45	-0.57%	-0.68%
21-08-2020	233.62	0.50%	0.40%
24-08-2020	235.16	0.66%	0.55%
25-08-2020	235.61	0.19%	0.08%
26-08-2020	236.53	0.39%	0.28%
27-08-2020	236.96	0.18%	0.07%
28-08-2020	239.42	1.04%	0.93%
31-08-2020	232.72	-2.80%	-2.91%
01-09-2020	234.54	0.78%	0.67%
02-09-2020	236.27	0.74%	0.63%
03-09-2020	235.68	-0.25%	-0.36%
04-09-2020	231.7	-1.69%	-1.80%
07-09-2020	231.17	-0.23%	-0.34%
08-09-2020	230.05	-0.48%	-0.59%

Avg Ret	0.108%
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This is the sample daily NAV data for a Mutual fund. I've calculated the daily return for the fund for the time series, and I've also calculated the average daily return for the time series.

The average return is 0.108%.

Further, I calculate the excess return by subtracting the average return from the actual return. For example, the daily return for 4th August 2020 was 1.23%, the average return is 0.108%.

Hence, Excess Return –

$$= 1.23\% - 0.108\%$$

$$= 1.13\%.$$

Of course, you square this return to get the variance, from which you further calculate the standard deviation or the risk.

The point that I want to make here is that when you take the excess return, you get both positive and negative values. A positive value indicates a profit and negative value indicates a loss.

Now, let us look at the Sharpe ratio again –

Sharpe ratio = [Fund Return – Risk-Free Return]/Standard deviation of the fund

By, using the ‘standard deviation’ in the denominator, we try to adjust the returns per unit of risk. However, the risk contains both positive and negative returns.

After all, we do not want to penalize the fund for a positive return; we need to scrutinize it for only the negative returns.

The Sortino’s ratio helps in this regard.

The Sortino’s ratio is an improvisation over the Sharpe Ratio, wherein the denominator has only the negative returns or the ‘downside risk’, is considered.

Hence, the Sortino’s Ratio is –

= [Fund Return – Risk-Free Return]/Downside Risk

The objective of Sortino’s ratio is to estimate the excess return adjusted for only the downside risk. Like the Sharpe ratio, higher the Sortino’s ratio, better it is.

Apart from this one change, there is not much difference between the Sharpe and Sortino's Ratio.

23.2 – Capture Ratios

I find the capture ratios very interesting. In my opinion, the capture ratios overshadow all other metrics and get straight to the point.

Before I discuss these capture ratios, let me tell you a quick story from my college days.

We were a group of friends in the first year of Engineering; we were young, restless, and misguided in life. 😊

We were about 8-10 of us, always moved around in a group. Played cricket all day long, missed classroom sessions, and would sit in the parking lot spending hours talking about useless things in life. I must agree; it was a lot of fun 😊.

So much fun that we at times ignored exams around the corner, to the extent that most of us would barely manage to get a passing mark.

But there was this one guy in the group who was a little different. He would spend time with the rest of the gang, hang out, chit chat, play cricket, and go back home late. He would have all the fun the entire group had. However, around exam time, he would go back home to study and managed to do better than the rest of the group. Not that he scored great marks, but he certainly did better than the rest of us.



And we would all wonder how this guy did it. Sounds typical right? I'm sure many of you reading this may have come across similar situations in your college life.

But why am I telling you this story? Well, there is a reason for it.

Please think about this smart friend of mine. While he had 100% of the fun with the group, he knew when to cut the slack. He knew it was too risky to not study for the exams.

It may sound weird, but let's extend this to mutual funds. Imagine this friend of mine as a mutual fund and the rest of us as the mutual fund's benchmark.

When the group (or the benchmark) was having fun (or let's say generating positive returns), so did this friend of mine (the mutual fund) to his full capacity.

When it was time to study, the group (benchmark) suffered (think of it as a negative return), but this friend had good risk management practise, he scored better than the group.

If we were to summarize his performance, he had max fun, but managed risk well, and fared slightly better than the rest.

The summary is nothing but the ‘Capture Ratio’.

The capture ratio tells us, for a given period, to what extent did the fund capture the positive returns of its benchmark and also to what extent it captured the negative returns from the benchmark.

Here is an example –

Capture Ratios	Fund	Category	Index
Upside	99	92	100
Downside	119	95	100

This is the capture ratio of HDFC Top 100, Direct, Growth fund on a 3-year basis. I’ve taken this from Morningstar India website.

The fund has an upside capture ratio of 99, which implies that the fund has managed to capture 99% of the Index’s up move.

Likewise, the downside capture ratio is 119, which means that the fund has captured 119% of the downside returns of the Index.

The math behind capture ratio is elementary, but I’ll skip that since as an investor, you’d not need it.

All I want you to remember is that the upside capture ratio conveys the extent to which the fund captures all the positive returns of its benchmark. The downside capture ratio indicates the extent to which the fund captures (or rather avoided) the negative returns of its benchmark.

Given this, ask yourself, what should be the ideal capture ratio of a mutual fund? Well, we would want the fund which captures 100% of the upside if not more. At the same time, we would want the downside capture ratio to be as low as possible.

Well, this is not easy 😊

A fund will either have a great upside or a great downside capture ratio, but not both.

A fund either has a great upside capture ratio along with a disappointing downside capture (like this HDFC fund) or you will find the other way round, where the upside capture is low and so is the downside capture.

Check this –

Capture Ratios	Fund	Category	Index
Upside	83	90	100
Downside	44	96	100

This is the capture ratio for the Parag Parikh Long term equity fund on a 3-year basis. While the upside is not impressive at all, the downside capture ratio is quite impressive.

So the point is that it is always a trade-off. You, as an investor, need to be clear on this – do you want the fund to be aggressive in chasing returns or do you want the fund to have a great risk management practice?

I prefer to look at the latter. I like funds which manage the risk better, and I evaluate this by looking at the consistency of the downside capture ratio, over many years.

If you look at HDFC Top 100, Regular Growth fund, the downside capture ratio of 3, 5, and 10 years are 120, 119, and 111 respectively. I like the consistency in risk management here, and I'd value this far higher than the upside capture ratio.

By the way, the 3, 5, and 10 year upside capture ratio is 98, 103, 104 for the same fund, which is not bad at all. Also, it does not matter if you choose to analyse the upside or downside capture ratio; what matters is the consistency. Hence it's important to look at capture ratios across multiple years.

I usually check the capture ratios on the Morningstar India website. I'm not sure if these ratios are listed anywhere else.

And with this and everything else we have discussed in the previous chapter, I hope you've got a sense of all the different mutual fund metrics.

The next few chapters will focus on analyzing a mutual fund and building a mutual fund portfolio for specific financial goals.

Stay tuned.

Key takeaways from this chapter

- Sharpe ratio measures the return per unit of risk by considering both the positive and negative returns
- Sortino's modifies the Sharpe ratio and includes just the downside risk

- Upside capture ratio gives you an estimate of how much of the Index's upside the fund has captured
- Downside capture ratio gives you an estimate of how much of the Index's downside returns the fund has captured.
- Look for consistency in capture ratio

CHAPTER 24

How to analyse an Equity Mutual Fund

24.1 – Recap

I'd like you to take a moment and reflect upon the last 23 chapters in this module. I want you to recap the things we have discussed so far mentally.

In a nutshell, here is what we have discussed –

- Identified that investment is a key part of personal finance
- Identified various assets which can help us move closer to our retirement goals or any other financial goals
- Figured that Mutual funds are the primary financial instrument which will help us plan our financial goals better
- After establishing the above, we figured that it is important to focus and learn more about mutual funds
- We started by understanding what a mutual fund is followed by the importance of the mutual fact sheet
- We identified the most popular categories of mutual funds and discussed the same
- In the process, we explored various types of funds across both equity and debt categories
- Discussed the Index fund

- Most recently, we discussed the various performance and risk attributes of mutual funds.

We are now at an interesting junction as we steer our way to the final leg of this module, i.e. to figure ways to build mutual fund portfolios to help us achieve various financial goals in our lives.

If you think about it, building a mutual fund portfolio has three parts to it –

1. Identify a financial goal (it can be any) and translate that financial goal in terms of time and corpus. For example here is a financial goal – 40 lakh (in today's terms) for my 10-year-old kid's Post-graduation degree in the US. If you break this down, it translates to a requirement of Rs.40L (adjusted to inflation) in 15 years
2. Identification of funds to help you achieve the financial goal
3. Periodic review and maintenance of the portfolio.

In my view, the first and third point is fairly easy. It's the 2nd point, i.e. the actual act of building a portfolio is the tricky bit. If you isolate just the 2nd point, then you will realize that it is made up three things –

- Analyze funds, pick the right ones and avoid investing in the bad ones
- Figure the portfolio composition – just equity, just debt, a mix of equity and debt etc.

- Once the portfolio is identified, figure how much to invest across each of these funds

Again, in my view, one of the key elements is the fund analysis. You need to get this right and ensure that you have partnered with the right fund house and the right fund to help you achieve the financial goal you've set aside.

In this chapter, we will discuss a simple technique using which you can analyze an equity mutual fund. Think of this as a template; you can apply the same to all equity funds. Of course, there is no right or wrong technique; what I discuss below is from my own experience. You can develop your template as you gain more experience with mutual fund investing.

So let us get started.

24.2 – Hygiene check



I'll pick an Equity mutual fund and set out the process to analyze the fund. As I mentioned, there is no guided path to analyze a mutual fund. You need to develop your method to do that. While few investors like to focus heavily on the fund manager and the quality of stocks the fund manager has picked, others like to look at only the historical returns.

I like to keep the process simple and stick to things that I'm most concerned about, i.e. the fund's ability to manage risk and generate returns.

Alright, so let us get started on fund analysis.

For the sake of this discussion, I've picked the Kotak Standard Multi-Cap Fund (Growth, Regular). Do not treat this as a recommendation of any sort 😊

Remember, direct funds are relatively new and may not have the necessary historical information; hence we are looking at the regular funds.

The first step is to run a few basic hygiene checks, which includes some of the good to know information about the fund. Usually, this information is available in the fund's fact sheet. The first thing to note is 'about the fund itself', take a look at the snapshot below –

About Kotak Standard Multicap Fund

- The investment objective of Kotak Standard Multicap Fund scheme is to generate long term capital appreciation from a portfolio of equity and equity related securities, generally focused on select few sectors.
- The scheme endeavours to identify sectors that are likely to do well over the medium term and takes focus exposures to the same.
- There is no restriction on which type of sectors the scheme can take exposure to and the portfolio will be generally diversified at the stock level across market capitalisation.
- The scheme is well positioned to capture various themes that are in focus in a focused manner.

Performance

as on 01/01/2021

2015/2020

	Since Inception	Last 5 Year	Last 3 Years	Last 1 Year
KOTAK STANDARD MULTICAP FUND (R)	12.83%	9.08%	2.48%	-3.16%
NIFTY 200 TR	9.85%	8.72%	2.19%	-3.33%
NIFTY 50 TR	9.88%	9.08%	5.14%	-4.17%

For performance in INR format please refer performance section.

Scheme inception date: 01/01/2004. Mr. Harish Sridharan has been managing the fund since 01/01/2019. Different plans have different expense ratios. Past performance may or may not be repeated in future. All periods starting the period from inception to the date of the scheme of the then prevailing NAV. Returns – 1 year, CAGR (Compounded Annualized Growth Rate), & A stands for data not available. Data: Price to Price (P/P), Returns in INR show the value of investment made at inception. Source: IIFM NFI System. Kotak Standard Multi-Cap Fund is a regular fund. Kotak Standard Multi-Cap Fund will offer from 01/01/2019. The Total Return Index, in terms of INR, circular dated January 6, 2019, the performance of the scheme is benchmarked to the Total Return Index (TRI) of the Benchmark Index (Index of Price Return Index (PRI)).

From the note above, I develop an orientation for this fund –

- It's a multi-cap fund, which means the fund can invest across various categorizations.
- Since it's a multi-cap fund, I'd expect the fund benchmark itself against a diversified index, which means Nifty 50 TRI may not be its benchmark
- I look at the fund's inception date, in this case, its 11th Sept 2009, so not a very old fund, but old enough to give me ten years of history.
- The fund manager has remained the same, which is fine. If you belong to the fund manager cult, then you can dig deeper into who the fund manager is, his background, credentials, track record etc. I prefer to skip that bit.

I dig further in the fact sheet and get other important information about the fund –

Investment Objective:

The investment objective of the scheme is to generate long term capital appreciation from a portfolio of equity and equity-related securities, generally focused on a few selected sectors. However, there is no assurance that the objective of the scheme will be realized.

Benchmark: Nifty 200 TRI

Allocation date: September 11, 2009

AMFI: F0988811 Gr

AMFI: F0988811 Gr

Key Ratios as on 31 Sep, 2020

Portfolio turnover ratio	11.31%
Standard Deviation	26.73%
Beta	0.96
Tracking Ratio -M	0.09%
Expense Ratio (Direct) **	0.73%
Expense Ratio (Regular) **	1.09%

[Click here to know TCR](#)

Source: ICRA MF Explorer

Investment Style:

Investment style				
Value	Blend	Growth	Size	
			Large	
			Mid	
			Small	

Available Plans/Options

A) Regular Plan B) Direct Plan

Options: Dividend Payout, Dividend Reinvestment & Growth (applicable for all plans)

Minimum Investment Amount

Initial Investment: ₹ 1000 and in multiples of ₹ 1 for purchase and for ₹ 0.01 for redemptions

Additional Investment: ₹ 1000 & in multiples of ₹ 1

Subsequent Investments: Minimum 3 Years and above

Load Structure

Entry Load:

Nil.

Exit Load:

(i) For redemptions/switch out of up to 10% of the initial investment amount (limit) purchased or switched in within 1 year from the date of allotment: Nil.

(ii) If units redeemed or switched out are in excess of the limit within 1 year from the date of allotment: 1%

(iii) If units are redeemed or switched out or/and after 1 year from the date of allotment: Nil

(iv) Any exit load charged (net off Goods and Services Tax, if any) shall be credited back to the respective Scheme. (Applicable for all plans). Units issued on reinvestment of dividends shall not be subject to exit load (applicable for all plans)

You can read through the investment objective, you will get valuable insights from this at times, especially when looking at debt funds. You will figure that this fund is not restricted to any particular market capitalization. The investment style grid suggests that the fund can invest across the market and has a blended approach to growth and value style investing.

If you dig up the portfolio details, you will figure that the fund has the majority of its investment in large and mid-cap stocks. Given this, the benchmark for this fund is Nifty 200 Total Return Index, which is fine.

I know many MF investors dig into the portfolio details and start to sweat over why the fund manager has invested 'x' amount in Stock A versus 'y' amount in stock B, and in the process, think they carry out 'a through' mutual fund research.

Nitpicking on the **Equity** fund's portfolio is not research. I mean, think about it, if you could figure out which is a good stock and which is not, then you may as well invest in the stock directly right?

This is as good as sitting on your couch with a tub of popcorn and passing serious, opinionated comments on how Virat Kohli should bat in International cricket.

Anyway, the fund has an AUM of Rs.29,500 Cr, which makes it a large fund. From the AMC perspective, how large is this fund? To figure that out, you need to look at AMC's overall AUM.

Asset Class-wise disclosure of AUM & AAUM

Category of the Scheme	Rs. in Lakhs	
	AUM as on the last day of the Quarter	Average AUM For the Quarter
Liquid Fund/Money Market Fund/ Floater Fund	3,328,845.42	4,381,686.20
Gilt Fund/ Gilt Fund with 10 year constant duration	46,216.48	45,213.81
Remaining Income/ Debt Oriented Schemes	5,308,704.80	5,441,305.99
Growth/ Equity Oriented Schemes (Other than ELSS)	4,061,031.70	3,796,828.94
ELSS Funds	94,771.02	90,914.83
Hybrid Schemes	2,118,340.85	2,158,818.68
Solution Oriented Schemes	0.00	0.00
Index Funds	0.00	0.00
GOLD ETF	46,857.48	40,685.81
Other ETF	863,570.39	878,803.59
Fund of Fund investing overseas	8,770.43	8,674.38
Total	15,777,988.47	16,808,931.63

The AUM information is updated on the AMC website regularly. As you can see, Kotak AMC has an AUM of 1.5L Crore, which makes the standard equity fund about 18% of the overall AUM.

However, suppose you look at the Equity category. In that case, the AUM is about 40,000 Crore, which means the Kotak Standard Equity Fund is nearly 72% of the category AUM, which implies that this is one of their flagship funds for the category.

Why are we digging into this information? Well, we need to know how the fund is positioned within the AMC to get a perspective. It is also expected that the AMC would be extra cautious not to mess up their flagship funds.

While at it, do you think funds with large AUM is a problem?. I know many folks fret about the 'large AUM' problem, the rationale being that the fund manager may find it difficult to manage the funds as the opportunity shrinks.

If the fund flow is steady and the AUM increases gradually over time, then, in my opinion, it should be ok. However, if there is a drastic increase in AUM, maybe because of aggressive marketing campaigns, then that could be a problem and usually results in a slight lag in the performance.

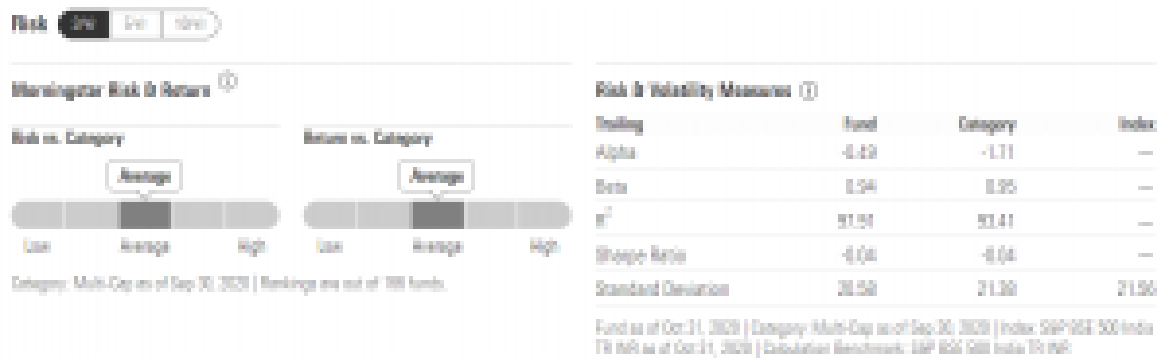
Smaller funds do have an advantage in terms of nimbleness.

Apart from the AUM size, we look at the expense ratio of the fund, direct is at 0.73% and regular is at 1.69%. Not surprising at all 😊

Since you are reading this, I hope you won't consider regular funds ever again in your life 😊

Moving ahead, I'd like you to look at a few other metrics, these are reported in the factsheet and also on 3rd party websites like Morningstar and Value Research.

The snapshot below is from Morningstar.



The fund's standard deviation (on a 3-year basis) is 20.58%; this suggests the fund can fluctuate 20.58% up or down over a 3-year basis. The standard deviation of the category is 21.38%. If you look at it from a risk perspective, this is nice since it indicates that the fund is slightly better compared to the category.

If you switch to the 5 and 10 years period, the fund's SD is 18.39% and 17.42%, while the category's SD is 19.12% and 18.4% respectively. For now, this is a good sign as it hints that the fund is good at managing the risk.

Do look at the Sharpe ratio as well. In this case, the Sharpe ratio is negative, which means either the risk-free return is higher compared to the portfolio's return or the portfolio's expected returns are negative. Either way, this is not conclusive. Hence we can ignore the Sharpe ratio.

Check the Alpha and the beta of the fund to get a sense of the fund's performance compared to the category. Of course, you need to do this across 3, 5, and 10 year periods.

Usually, the fund's hygiene check ends at this point. All that we do in this stage is to gather a few important 'good to know' data points.

24.3 – Rolling returns check

You must have heard the line ‘past performance is not an indicator of the future performance’, while this is true, there is no better alternative to this. By studying the past returns and its behaviour, we would at least know what to expect.

By past returns, I don’t mean 1,3,6 or 12 months returns. In fact, in my opinion, anything less than three years return is pointless when it comes to Equity returns. Three years itself is an ok time frame, I’d suggest five years or higher, but three years is a good start.

We start by looking at the rolling returns. By the way, I hope you know what rolling returns mean, else I’d suggest you look at the chapter and familiarize yourself with the same.

I’ll post a series of rolling return snapshots sourced from Rupeevest website. Hopefully, soon we will have Rolling returns of funds on Coin, our mutual fund platform.

Here is the three-year rolling return of the Kotak Standard Multi cap fund –

Rolling Return Graph



Rolling Return Statistics - 3 Year

11 - Sept - 2012 to 05 - May - 2018	Returns Metrics [%]			Returns Distribution [% of Observs]				
Fund Name	Average	Maximum	Minimum	Less than 0%	0 - 10%	10 - 20%	20 - 30%	More than 30%
India Standard Multicap Fund (SI)	15.20	35.20	-5.20	2.80	17.80	35.04	31.40	1.54
NIFTY 500	9.87	29.93	-8.87	8.64	30.47	43.15	1.74	8.88

As you can see, I've got the 3-year rolling return from Sept 2012. The blue line is the fund's three-year rolling return, and the grey is the benchmark's rolling return.

The first thing that will catch your attention is the spread between the two rolling returns. The blue line is consistently above the grey line, indicating that the fund has delivered better returns compared to its benchmark.

In the three years, the fund has delivered an average return of 15.2% while the benchmark has delivered 9.87%.

The moment you see such an outperformance, rather than getting excited, you need to pause and ask yourself – how is this fund pulling this off. Is the fund taking in more risk compared to its benchmark?

We will figure that out soon.

While the spread between the fund and its benchmark was significant in the initial years, it has shrunk since mid-2018.

Is the fund losing its sheen? One probable reason for this could be the rapid rise in its AUM.

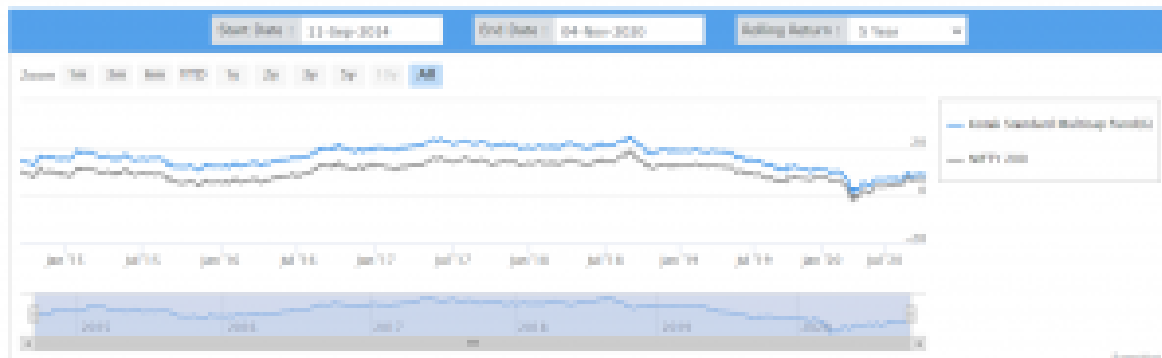
Apart from average returns, look at the minimum and maximum returns to get a perspective on the dispersion of returns.

The fund's 3-year min and max is -5.19% and +31.2%, and the benchmark's min and max are - 6.97% and +23.53% respectively. This fund stands impressive at this point.

It is important to understand that you are looking at the 3-year data, but just the 3-years data is not sufficient for analyzing an Equity mutual fund, we need to look at five and 10-year data as well to get a perspective.

Here is the 5-year rolling return of the fund and we compare that to its benchmark, the Nifty 200 –

Rolling Return Graph



Rolling Return Statistics - 5 Year

11 Nov 2018 to 01 Mar 2019		Returns Statistics (%)				Returns Distribution (% of Funds)			
Fund Name	Average	Maximum	Minimum	Less than 5%	0 - 20%	20 - 30%	30 - 35%	More than 35%	
Kotak Standard Multicap Fund(G)	16.51	31.20	1.31	0.00	9.87	51.83	38.26	0.00	
NIFTY 200	10.46	23.53	-3.28	0.36	64.91	32.09	0.00	0.00	

Again, on a 5-year basis, the fund's outperformance to the benchmark is quite impressive. While the fund's average is +16.51%, the benchmark is +10.46%. Note, this is still very similar to the 3-year data.

The dispersion in returns when looked at the minimum and maximum returns are also quite interesting. The fund's minimum is still a positive 1.18% while the benchmark is -2.28%.

However, the spread has narrowed down towards the extreme right, similar to how it does for the 3-year rolling return.

Lastly, let us see how the fund performs on a 10-year rolling return basis.

Note, there may not be many data points for the 10 years –

Rolling Return Graph



Rolling Return Statistics - 10 Year

11-Year-ROIC for 84-Funds (REX)	Return Statistics (%)			Return Distribution (% of Cases)				
Fund Name	Average	Maximum	Minimum	Less than 0%	0 - 10%	10 - 20%	20 - 30%	More than 30%
Total Standard Multicap Fund (2)	12.07	14.56	8.59	0.00	0.26	84.76	0.00	0.00
NIFTY 500	7.48	9.67	3.79	0.00	100.00	0.00	0.00	0.00

The average 10-year rolling return is 12.07% versus the benchmark's 7.48%, quite remarkable in my opinion. While the fund's minimum is 8.59%, the benchmark's minimum is 3.79%. On the positive returns side, the fund has put up an impressive 14.56% versus the benchmark's 9.67%.

Based on the rolling return data, there are a few apparent things –

- Why is the spread shrinking? Is the fund losing its sheen?
- While the returns are impressive, is this coming at the cost of higher risk?

The answer to the first question is tricky. There is no fund manager change, so its unlikely the investment style has changed. Is this because the fund has a large AUM? Well, this is a tough call to make, but my gut says this could as well be the reason.

Have a look at the trailing returns as on date –

Trailing Returns (%)											
	YTD	1-Day	1-M	3-M	6-M	1-Y	3-Y	5-Y	7-Y	10-Y	
Fund	-3.15	0.68	1.58	2.90	6.07	35.90	-1.40	3.98	9.47	14.67	10.36
S&P 500 TRI	0.26	0.74	1.43	3.28	7.93	28.65	1.99	3.17	9.14	11.88	7.63
Equity Multi Cap	-0.87	0.71	1.46	3.19	6.87	34.95	0.36	1.81	7.75	12.68	8.27
Rank within category	41	25	38	38	43	29	41	13	11	8	8
Number of funds in category	60	64	64	64	63	61	59	43	48	34	30

As on 04-Nov-2020

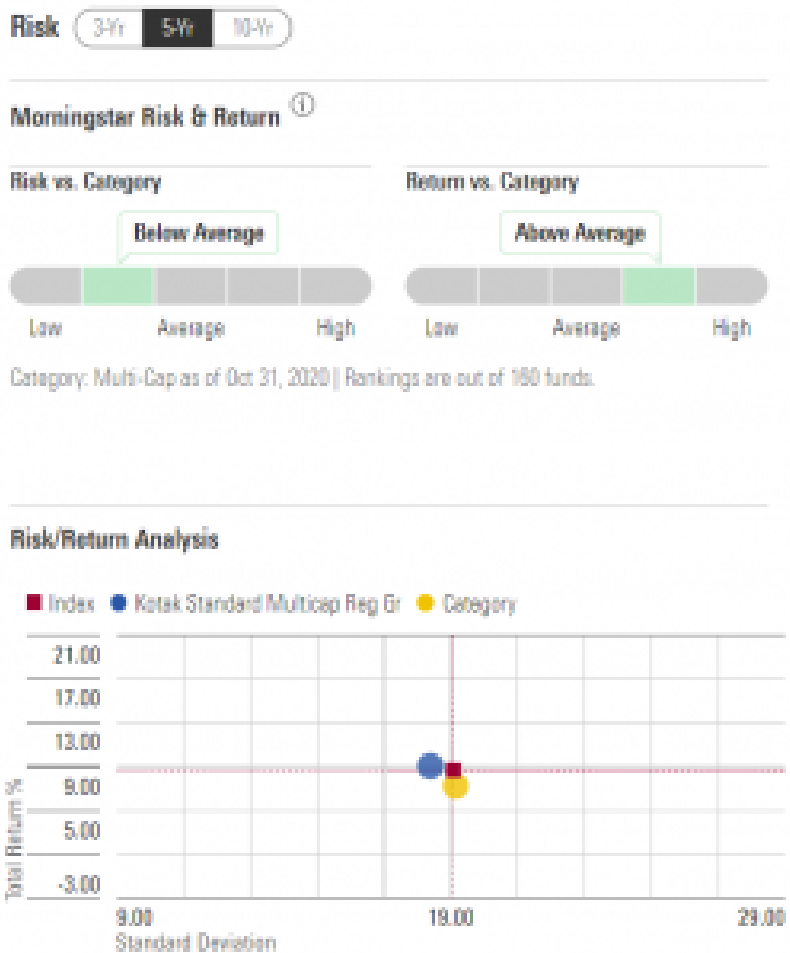
We can see the fund has underperformed the benchmark on a 3-year basis, while it is at par on a 5-year basis, and on the 10-year basis, it still has a slight outperformance.

All in all, it gives me a perspective that the returns were great in the past years, but will that continue is the question. However, the interesting bit that the performance has been better than its peers look at the Equity Multi cap category performance.

As far as the 2nd concern goes, let us focus on the risk metrics of the fund, perhaps the most crucial bit of our analysis.

24.4 – Risk – Return matrix check

I find the risk-reward matrix published by Morningstar quite useful. Have a look at this –



I can choose to view this across the 3, 5, and 10 years period. I've been selected for five years.

The initial bit highlights the fund's risk versus the category and the fund's return versus the category. We know the returns have been great, so no point looking at it again. Risk versus the category risk is 'below average', so that's encouraging. For more details, I now look at the matrix.

The Y-axis of this matrix is returned, and the X-axis is the risk. If you have read Varsity's Module 9 on 'Risk Management', then this matrix is already familiar to you. If not, all you need to know is that the higher you move on the Y-axis, higher is the return, and the further you traverse on the X-axis, higher is the risk.

Anyway, ignore the blue and yellow button and start with the red square, which is right at the centre of the matrix. The red square belongs to the benchmark, and from its positioning in the matrix, we can conclude the benchmark has generated a return of 10% by taking the risk of 19%.

Now, look at the yellow button; it belongs to the category. We can see that the yellow button is on the same vertical plane as the red square. Hence we can conclude that the average category risk is similar to that of the benchmark's risk, i.e. 19%.

Unfortunately, for 19% risk, the category's return does not match up to its benchmark, as it is slightly below the benchmark's return.

So if you were to choose an investment between the category and its benchmark, it does not make sense to invest in the category since for similar risk, the benchmark offers better returns.

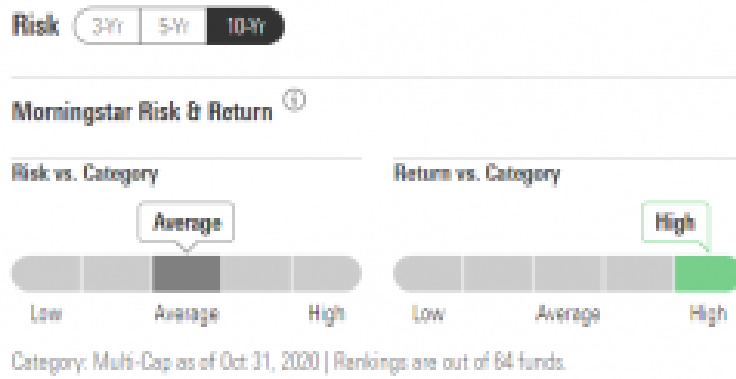
What about the fund in perspective?

Well, the fund has a better risk-reward ratio compared to the benchmark. It seems to have generated similar returns like the benchmark by taking on lesser risk, which in my opinion is good.

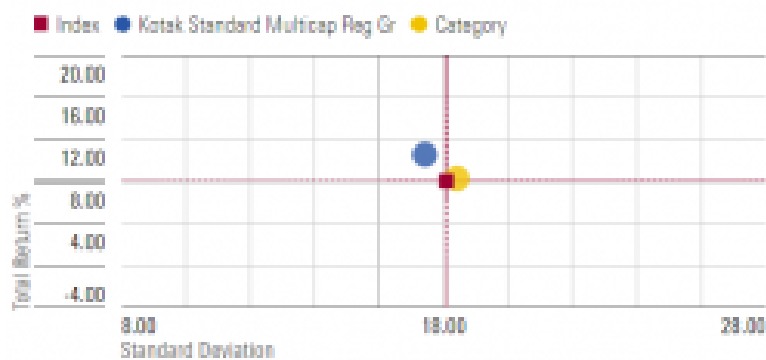
Remember, you are paying the fund manager for active management. Active management does not necessarily mean generating better than benchmark return. I think job is well done if the fund manager can generate similar returns like the benchmark by taking on lesser risk (at a lower cost hopefully).

So on a 5-year mark, this is looking good. Shifting gear to the 10-year window

–



Risk/Return Analysis



It gets a bit more impressive on a ten-year basis, while the category and benchmark have a similar risk-return profile (18% risk, 12% return), the fund has slightly lesser risk and higher return profile.

So at this point, I know that the fund has exhibited a decent track record in terms of risk and reward profile. As the last step, let us look at the capture ratios.

24.5 – Capture ratios

We discussed the capture ratios in the previous chapter. I hope you are familiar with it by now. Here is the capture ratio on a 5-year basis –

Capture Ratios	Fund	Category	Index
Upside	94	93	100
Downside	90	97	100

Look at the downside capture ratio; the fund has managed to capture 90% of the fund's downside, which is good. Again, this a reflection of better risk management at the fund house.

The capture ratio gets better on a 10-year basis –

Capture Ratios	Fund	Category	Index
Upside	99	97	100
Downside	87	95	100

The fund has captured almost 100% of the benchmark's return while capturing only 87% of the benchmark's downside returns. Contrast this to the category.

All in all, our quick analysis shows that Kotak Standard Multi-cap fund is good. Does that mean you should invest in it right away? Well, we will discuss this next chapter.

Lastly, I want you to recognize the fact that we have not looked at fund 'ranking' given out by agencies. Looking at fund ranking to make an investment decision is quite useless since you can do a better job yourself.

Key takeaways from this chapter

- You can start the equity mutual fund research with a basic hygiene check to familiarize yourself with the fund
- Know the size of the AUM, its investment objectives, a bit about the fund manager, and its benchmark
- Look for the rolling returns of the fund on 3,5 and 10-year basis.
- Look for the average, minimum, and the maximum returns to get a sense of the dispersion of the return
- Compare the rolling returns with its benchmark rolling returns
- If there is excess return, check if this is coming at the cost of additional risk
- Look for the risk-reward matrix and understand the risk-reward profile on 5 and 10 years basis
- Check the capture ratios

CHAPTER 25

How to analyse a Debt Mutual Fund?

25.1 – Confused Portfolio

In the previous chapter, we picked up an equity fund (Kotak Standard Multi cap Fund) and looked at the steps to analyze an Equity fund. The idea was to highlight the steps involved in analyzing an equity mutual fund. Of course, towards the end of the previous chapter, we also figured that the fund was indeed good, especially when it comes to risk management.

The question is – since the fund is good, should you invest in the fund and include it in your mutual fund portfolio?

While on the face of it, it appears like a no brainer, we've analyzed the fund across both risks and return parameters. The fund ticks off well on all the good qualities, so it makes sense to invest.

However, the decision to invest in a fund (and therefore include it in your portfolio) should not stem from how good or bad the fund is.

The decision to invest in a fund should come from the objective of your mutual fund portfolio. Remember, the objective serves a financial goal. Now, for example, if my financial goal is to build an emergency corpus, then investing in Equity funds may not make sense. So it does not matter how good the fund is, there is no question of investing.

For many, asking them not to invest in a good mutual fund may come across a counter-intuitive thought.

To put this in a layman's context, think about Dolo 650, we all agree that it's a good paracetamol. Now just because it's a good tablet, would you take it if you have knee pain?



No right? It makes sense to take a specific tablet which addresses your knee pain.

Likewise, an investment should be made only when the portfolio's objective and the fund's risk-reward profile matches. In case, you do not follow this approach of aligning the two; then you will most likely end up with a 'confused portfolio'.

Over the next few chapters, we will discuss how to align funds with portfolio goals, but before we do that, in this chapter let's discuss how to analyze a debt mutual fund.

25.2 – Risk recap

Like in the previous chapter, in this chapter we will pick a debt mutual fund and analyze the fund. But before we do that, I'd like to quickly touch upon the major risks associated with a debt fund.

Credit risk – Remember the debt MF invests its money in debt obligations. For example, company A wants to borrow 50Cr to fund its operations, decides to float a 5-year bond by paying an interest of 9%. AMC X decides to invest in this bond. Assuming things go smoothly, the company gets the funds, and the AMC gets the interest payment. At the end of 5 years, the company is expected to repay the principal.

As you can imagine, this is fairly standard practice.

The problem arises if something goes wrong with the company during these five years and the company is unable to service the interest payment on time. If things get worse, the company can even throw their hand up in the air and say, 'sorry', no cash to repay the principal or the interest.

All AMCs running debt funds carry this risk, i.e. the risk of default; this is called the 'credit risk'. Many funds in the past have taken a hit due to such defaults.

Now, there is a variation to credit risk. Imagine that as on today, everything is going good for company A, but there is trouble brewing within the company and the credit rating agencies identify the same. The rating agencies downgrade the company's creditworthiness and lower the credit rating from say AAA to AA. The act of lowering the credit rating itself is a risk; this is called, 'credit rating risk'.

Interest rate risk – Bonds prices are sensitive to interest rate changes, both bond prices and interest rates are inversely related. We have discussed this earlier. A fall in interest rate tends to increase the bond prices (which means the NAV tends to increase) and increase in interest rate tends to decrease the bond prices, and therefore the mutual fund's NAV.

The sensitivity of the bond prices to the interest rate risk is captured by 'modified duration' of the bond. Higher the modified duration, higher is the risk associated with the changes in interest rate. When a debt mutual fund reports the modified duration, then it is the aggregate modified duration across the various bonds they hold.

Alright, now that we had a quick refresher on the risks involved, let us focus our efforts towards analyzing a debt mutual fund.

25.3 – Portfolio check

I've mentioned this earlier in this chapter; I'd like to say it again, invest in a fund not because it is good or spectacular, invest in it because it aligns with your portfolio goals.

Debt funds allure many investors because of the popular perception that it is low risk. Often debt funds get sold as a safe haven for your capital, an alternative to the bank's fixed deposit. But it is not.

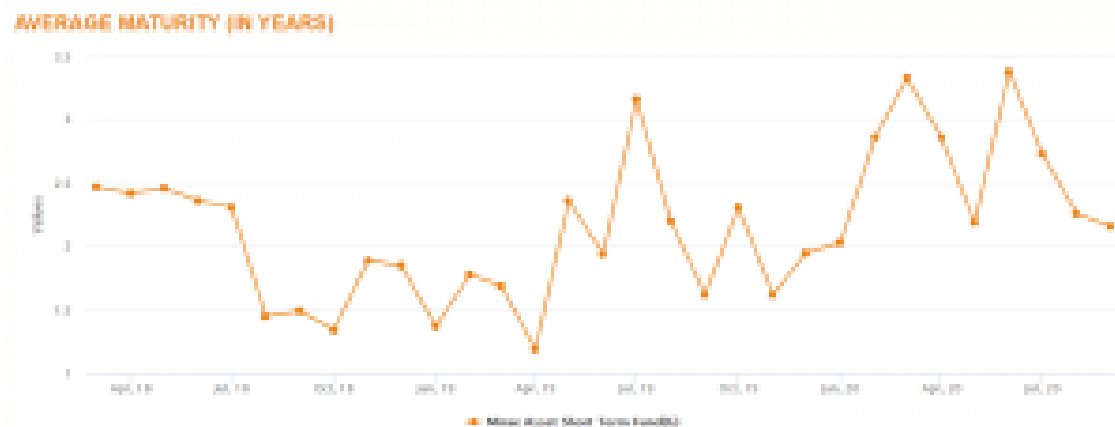
I'm not saying this to discourage you from investing in a debt fund; I'm reiterating this to highlight the fact that debt funds are not risk-free. Debt funds can be volatile and can cause a permanent loss of capital.

Alright, let us move ahead with the analysis part. I've picked Mirae Asset Short Term fund for our analysis. The idea is to lay down a template using which you can analyze any debt fund of your choice. Much of the analysis in a debt fund is centred around the risk and the fund's portfolio, so this will be very different compared to the equity fund analysis.

The fund itself is relatively new, with its NFO sometime in early 2018, so it does not have many data points to track, but it is ok.

As the name of fund indicates, this is a short-term fund, meaning the fund will invest in bonds which have short term maturities ranging between 1 to 3 years.

Have a look at the average maturity graph of the fund, sourced from the AMC website –



The average maturity of the fund is roughly around 2.5 years, which means that the fund is susceptible to default risk, credit rating risk, interest rate risk, and the 'change in the perception' of interest rate, risk.

Now, in case any of these risks get triggered, then the fall in NAV will be steep, and the fund will take time to recover from the losses. The only way to deal with this is to ensure you stay invested in the fund for a long enough period.

How long?

There are different theories, but I believe that the minimum time you need to invest in a debt mutual fund should be equal to, at least the average maturity of the fund. So in this case, if I'm investing in this fund, I'd give it roughly 2.5 to 3 years and not below that.

Similarly, if I'm looking at a Gilt fund whose average maturity is ten years, then I'd be prepared for a long-haul investment lasting at least ten years.

The investment tenure is something you need to be super clear when investing in a debt fund.

While we did not pay much attention to the portfolio in an equity portfolio, we do have to pay attention to the quality of bonds in a debt portfolio.

Here is a quick look at the portfolio allocation (AMC website) –

ALLOCATION



The fund has 67.31% allocation to corporate bonds, which means to the fund is highly susceptible to credit risk. Now, how do we figure out that the debt fund manager is managing the credit risk? Well, we need to check for –

- The diversification of the fund
- Exposure to companies – high exposure to a single corporate entity draws a red flag
- Credit rating check on the papers held by the fund.

I dug into the portfolio of this fund; you can do the same by visiting Mirae's download section –

<https://www.miraeassetmf.co.in/mutual-fund-scheme/fixed-income/mirae-asset-short-term-fund>

Here is the snapshot of a section of the fund's portfolio –

zerodha.com/varsity

Mirae Asset Short Term Fund						
Monthly Portfolio Statement as on October 31, 2022						
Name of the Instrument	ISIN	Rating	Quantity	Market/Fair Value (Rs. Cr.) (2022)	% to Net Assets	YTD
Debt Instruments						
Govt / Semi-Govt Issuing on Stock Exchange						
3.50% State Government Securities (2019-2022)	IN0000000000	GOVT/GOV	25,00,000	2582.50	4.89%	4.89%
7.10% Government Bonds (2019-2023)	IN0000000000	GOVT/GOV	25,00,000	2577.50	4.86%	4.86%
3.50% Government Bonds (2019-2024)	IN0000000000	GOVT/GOV	25,00,000	2583.31	4.90%	4.90%
7.70% Laxmi A Yields Limited (2019-2023) **	IN0000000000*	CRISIL AAA	50,00,000	5076.50	9.67%	9.67%
7.00% National Housing Bank (2019-2024) **	IN0000000000	CRISIL AAA	50,00,000	5000.00	9.48%	9.48%
7% Hindustan Petroleum Corporation Limited (2019-2023)	IN0000000000	CRISIL AAA	50,00,000	5000.20	9.48%	9.48%
7.00% Housing & Urban Development Corporation Limited (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5027.00	9.59%	9.59%
7% Reliance Industries Limited (2019-2023) **	IN0000000000*	CRISIL AAA	50,00,000	5023.51	9.56%	9.56%
7.00% LIC Finance Limited (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5044.00	9.64%	9.64%
7.40% State Finance Corporation Limited (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5011.00	9.55%	9.55%
4.70% Hindustan Petroleum Corporation Limited (2019-2023)	IN0000000000	CRISIL AAA	50,00,000	5027.00	9.56%	9.56%
4.00% Oil & Natural Gas Corporation Limited (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5000.00	9.48%	9.48%
7.00% Power Grid Corporation of India Limited (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5009.00	9.50%	9.50%
7.00% National Bank For Agriculture and Rural Development (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5027.00	9.59%	9.59%
7.00% Laxmi A Yields Limited (2019-2023) **	IN0000000000*	CRISIL AAA	50,00,000	5023.51	9.56%	9.56%
7% Reliance Industries Limited (2019-2023) **	IN0000000000*	CRISIL AAA	50,00,000	5023.51	9.56%	9.56%
7.00% LIC Finance Limited (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5044.00	9.64%	9.64%
7.00% Hindustan Petroleum Corporation Limited (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5000.00	9.48%	9.48%
7.00% Reliance Limited (2019-2023) **	IN0000000000*	CRISIL AAA	50,00,000	5046.31	9.60%	9.60%
7.00% National Bank For Agriculture and Rural Development (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5041.70	9.53%	9.53%
7.00% Small Industries Development Bank of India (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5021.00	9.53%	9.53%
7.00% National Bank For Agriculture and Rural Development (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5000.00	9.48%	9.48%
7.00% Power Finance Corporation Limited (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5000.00	9.48%	9.48%
7.00% Indian Oil Corporation Limited (2019-2023) **	IN0000000000	CRISIL AAA	50,00,000	5004.90	9.49%	9.49%

The fund holds about 56 papers. Straightaway, I can see that the top 3 holdings (3% or more) are all sovereign papers, so there is no concern about credit risk on single large exposure.

We need to check the exposure at an aggregate level. For example, in the snapshot above, I can see that the fund has invested 2.44% of its assets in a 7% RIL bond maturing in August 2022.

The fund has also invested 1.64% of the assets in 8.3% RIL paper maturing in March 2022. So the question is what the total exposure to Reliance Industries Limited is?

To answer the above, you can quickly add up the numbers from the excel or check the quick info provided on the AMC's website –

CORPORATE BOND		
1	Reliance Industries Limited	5.56%
2	National Housing Bank	5.23%
3	Power Finance Corporation Limited	5.12%

The fund has a total exposure of 5.56% to Reliance, 5.23% to NHB, and 5.12% to PFC. In my opinion, these are slightly concentrated bets.

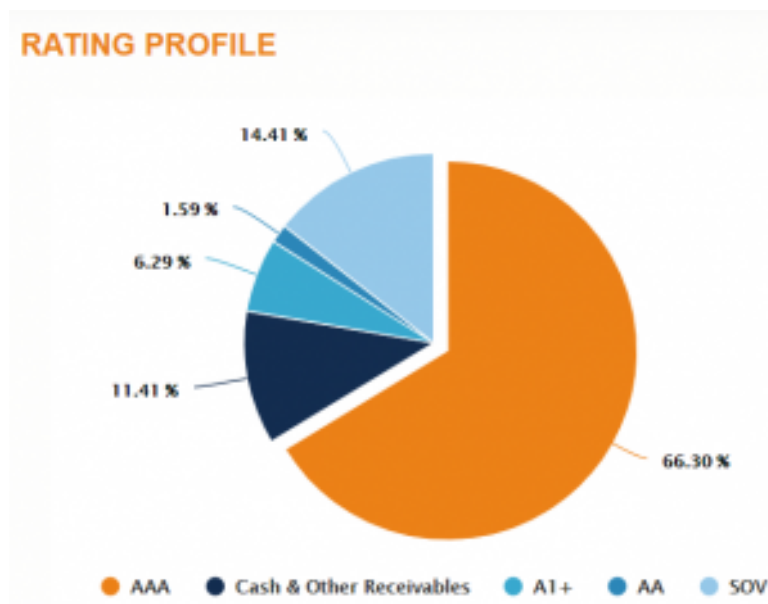
While 56 papers seem good enough, let us see how the fund holds up compared to the category –

Portfolio Aggregates				
	Fund	1Y High	1Y Low	Category
Number of Securities	56	56	24	64
Modified Duration (yrs)	1.97	2.67	1.35	2.34
Average Maturity (yrs)	2.28	3.38	1.62	2.89
Yield to Maturity (%)	4.59	6.38	4.59	5.18
Avg Credit Rating	AAA	--	--	--

The portfolio aggregates are from Value research online. While the fund has 56 securities, the category average is about 64. The fund has a slightly tighter portfolio compared to its peers, while the difference is not much in this particular case, one should be concerned if the difference is large. For example, I'd have been a bit concerned if the fund held 45 securities against an industry average of 65.

Moving ahead with our research, we now look at the quality of the papers. We can develop a perspective of the quality of papers (bonds) held in the portfolio by looking at the rating profile.

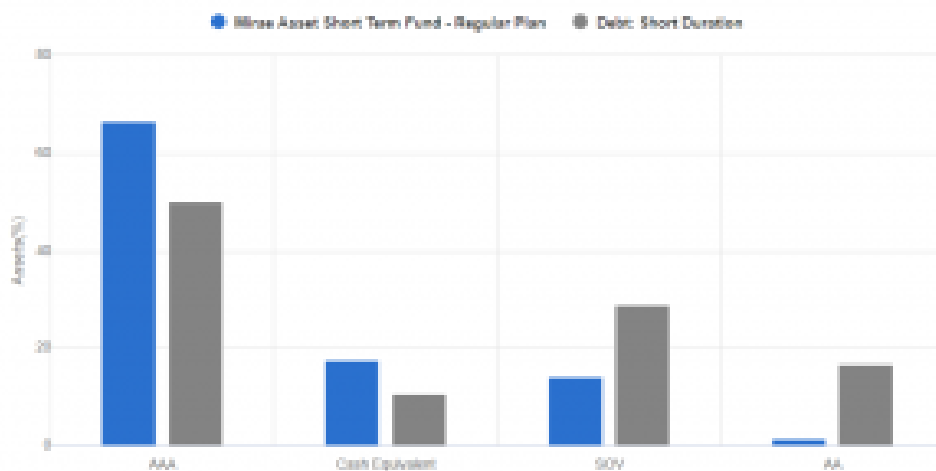
From AMC's website –



14.41% are sovereign papers, these papers don't have credit risk, so that's one less thing to worry. 66.3%, which is the bulk of the portfolio is AAA. But do remember the ratings tend to change as papers are constantly evaluated for credit quality by rating agencies.

A1+ and AA is roughly 8.5%; this is understandable as the debt fund manager's chase yields to showcase performance. The question, however, is to figure if the fund manager is going out of the way to chase yield.

Credit Rating vis-à-vis Category



I've got this from Value research online. The fund has a higher exposure to AAA bonds (66%) compared to the category (~45%), which is ok, but this comes with credit risk. The exposure to Sovereign bonds is less (14.5%) compared to the category average of about 25%. Exposure to AA bonds is less compared to the category, and the cash equivalent is higher compared to the category.

The information above tells me that the fund is open to taking on slightly higher credit risk, which to me is not a great sign considering this is a short duration fund. Think about it; this is a short duration fund, people invest in the fund for parking funds for say 2-3 year perspective with a moderate return expectation.

So what is the need to take on credit risk? I'd still be ok with the credit risk as long as there is enough diversification, but the concentrated portfolio is not very comforting to me.

25.4 – Other checks

Let us go back to the portfolio aggregates –

Portfolio Aggregates				
	Fund	1Y High	1Y Low	Category
Number of Securities	56	56	24	64
Modified Duration (yrs)	1.97	2.67	1.35	2.34
Average Maturity (yrs)	2.28	3.38	1.62	2.89
Yield to Maturity (%)	4.59	6.38	4.59	5.18
Avg Credit Rating	AAA	--	--	--

The modified duration of the fund is 1.97, while the category is 2.34.

Remember, the modified duration is sensitivity to changes in interest rate.

The slightly lower modified duration is attributable to the lower average maturity of the fund.

The average maturity of the fund is 2.28, while the category's average is 2.89.

From this, we can deduce that the fund manager is ok with slightly higher credit risk by placing concentrated bets while at the same time not so ok with interest rate risk.

The yield to maturity (YTM) of the fund is 4.59 compared to the category's 5.18. Remember, YTM is the total returns expected based on the assumption that the bond is held to maturity and the cash flow from coupons are ploughed back into the bond.

Intuition says that the higher the YTM, the better it is, this is correct. But YTM can also double up as an indicator of risk when compared to the category's YTM.

For example, if the category's YTM is 6% and the fund is 8%, then it implies that the fund is taking on additional risk to chase yield.

Ideally, I'd like to see the fund's YTM match the category's YTM, and I'm even ok with slightly lower YTM compared to the category.

I want to look at the fund's market risk parameters such as the standard deviation, beta, and alpha to get a sense of how volatile the fund compared to its benchmark. Ideally, it would help if you looked at it from a 3-year prospective, but since this fund is new, we won't get that information.

Lastly, I did look at the AUM of the fund; this is roughly 650Cr. Not a big fund given its category. When it comes to Debt funds, I'd like to avoid investing in very small funds or very large funds. In a situation where there is a run on the AMC and the AMC faces redemption pressure, then a large debt fund will have issues with debt market liquidity.

On the other hand, a small fund will never negotiate good rates with the issuers and hence is always a price taker. So it's always good to avoid both funds with either small or very large AUMs.

So would I invest in this fund? I'd probably hesitate to do so for a couple of reasons –

- The fund has a concentrated portfolio
- Credit risk is higher compared to the category
- It's a new fund, and I'm sure there are better alternatives in the market
- The fund has a low AUM, understandable since it's a new fund

If you are thinking why I've not looked at standard stuff like fund ranking, rolling returns, capture ratios, and other things, well, that's because it does not matter much for a debt fund.

Before we wrap up this chapters, here are few things for you to note –

- Investment in debt funds is mainly for capital preservation. Do not look at returns or chase returns when investing in a debt fund
- Please do not look at 'star ratings', of a debt fund. Usually, a debt fund is rated high if the returns are high. If a debt fund has a high return, that means the fund manager is taking on risk to chase returns.
- Apart from the standard debt fund risks, keep an eye on the liquidity risk. We have discussed the liquidity risk here – <https://zerodha.com/varsity/chapter/the-debt-funds-part-4/>. If both the fund's AUM and the number of securities fall, then it's a red flag and an indicator of liquidity risk
- SEBI has now mandated the funds to disclose portfolio details on a fortnightly basis, this is a good move. Do keep an eye on the portfolio changes
- Always diversify across AMCs, for example, if you want to invest in a short term fund, then split your money across two short term funds from two different AMCs
- It is best if you avoid investing in a credit risk fund. Credit risk funds take on credit risk to generate a return. In my opinion, you should not look at debt funds for returns. Use debt funds to safeguard capital

- Debt funds sometimes lend to two different companies but with the same promoter. Be wary of such funds.

Please pick up debt funds and try to analyze them in the way we have done in this chapter. I'd suggest you pick up a fund with at least 5-8 years history.

Over the next few chapters, I'll discuss financial goals and building a mutual fund portfolio to address the financial goal.

Key takeaways from this chapter

- The investment in a mutual fund should align with the financial goal
- Debt mutual funds carry credit risk, interest risk, and change in credit rating risk
- The minimum time duration to invest in a debt fund should be at least equal to the average maturity of the fund
- It is important to analyze the debt fund's portfolio
- Higher the exposure to corporate bonds, higher is the credit risk

- Sovereign bonds do not carry credit risk but do carry interest rate risk
- One should be concerned about large exposure to a single corporate entity
- One can look at YTM as the measure of risk
- It is best to debt funds with large and small AUMs

CHAPTER 26

The Mutual Fund Portfolio

26.1 – Assumptions

We have reached a stage where we have discussed almost everything related to Mutual funds, leaving us with the last crucial bit, i.e. the mutual fund portfolio construction. I've spent last several days to think through the best possible way to explain this, and finally concluded that this is a herculean task 😊

I'll explain why in a bit, but don't worry, I will attempt to explain it 😊

Before we proceed, I need to address a few assumptions I've made.

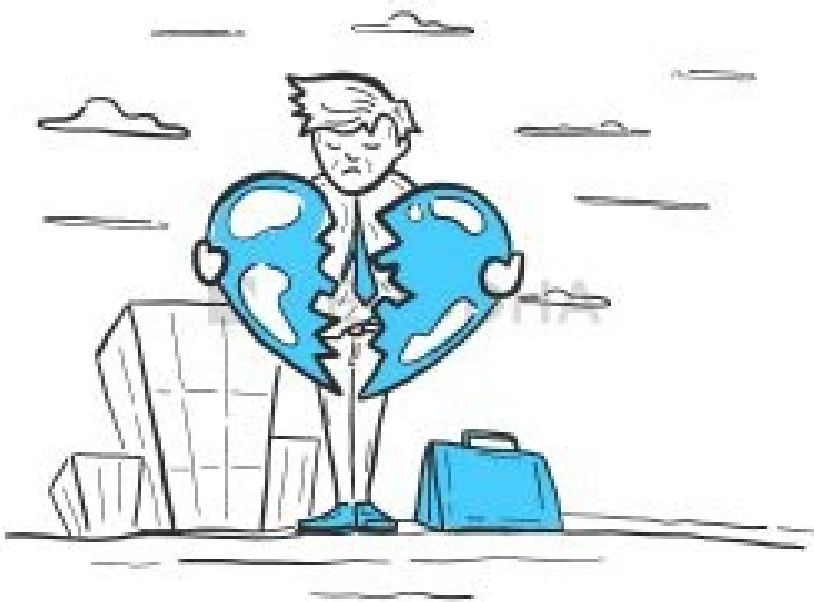
When we talk about constructing a mutual fund portfolio or for that matter an equity portfolio to solve for a financial goal, we make two assumption –

- We are covered for the risk
- We are covered for emergency

Before a person can have a portfolio of any sort, these two things should be in place.

Let me explain what I mean.

Cover for the risk – An individual faces many different kinds of risk in his/her lifetime. Risk across multiples areas of life – physical health, mental health, permanent disabilities, a prolonged state of joblessness, broken relationships, and whatnot.



While it is impossible to anticipate everything and get a cover, an individual should get a cover for two things in life – loss of life and hospitalization.

Of course, the cover comes in the form of insurance. Term insurance will ensure that your near and dear ones, your dependents are not financially burdened after your passing away.

Health insurance will ensure you don't spend your life's earnings to pay for hospital bills while getting treated for chronic illness.

Given this, you need to estimate the extent your family will be paid off if unfortunately, you pass away. Similarly, you need to figure out the extent of health insurance cover you need to get. Topics related to insurance are vast

and have many technicalities. I won't get into this at this point. But I want you to be aware that as an individual, the very first step in your 'personal finance' journey is to ensure you get cover for these two types of risks.

I want to stress that don't buy insurance products linked to investment plans. These are not worth it.

Cover for an emergency – I'm referring to an emergency corpus here, an emergency corpus to help you navigate your tough times. Tough time could be a job loss, or it could be as simple as having enough money to replace a piece of electronic equipment at home or a medical emergency.

I understand medical emergencies are covered by health insurance but don't take that for granted. To give you an example, in September 2020, both my parents were hit by Covid 19. When I took them to the hospital, the hospital made me pay a certain amount of money for admission and cover the initial expenses. Of course, I had an insurance cover for both of them, which later came in handy, but at that moment, I needed ready cash and needed a fairly large amount.

Or take this, for example – thanks to Covid 19, schools went online, and I suddenly had to equip the house with a printer and a laptop for my 10-year-old daughter. That was an unplanned financial expense but had to be done.

Emergencies can come in any form and can come at any time. One has to have sufficient funds, which is easily available to you when the emergency strikes. Given this, at the very initial stages of your 'personal finance' journey, I'd advise you to build this emergency corpus.

The question is, how much money is good enough for the emergency corpus? Different people have different opinions, but I see most of them agree to have an emergency corpus equivalent to 6 months of expense. For example, if your monthly expense is 40K, then the emergency corpus should be at least 2.4L.

But I don't subscribe to the 6-month emergency corpus template.

Each person is different; each family is different. It would help if you sat with your family, went through different scenarios and identified a corpus amount good enough to sail your family through these tough times.

Anyway, I will make these two assumptions – that you have the basic insurance cover and have built an emergency corpus. With these things taken care of, we will now understand how to build a mutual fund portfolio.

26.2 – Financial Goal

Imagine a newly married couple. Both the husband and wife are young, say in the late '20s, and both are working professionals. The couple aspires to buy a house of their own. Their idea of the home is a 2BHK apartment downtown, costing roughly 1.5Cr, and they give themselves a ten-year window to achieve this goal.

Or think of this situation – A 40-year-old working woman wants to accumulate money to upgrade her car over the next five years. The estimated cost of the car is 55L.

Or imagine this situation (last one, I promise) – A 21-year-old has just started working for an MNC. Wants to accumulate 20L in 8 years to fund his/her post-graduate degree in the UK.

These are all examples of a 'financial goal'. A financial goal has three specific attributes –

- The quantum of funds required
- The estimated time over which these funds need to be accumulated
- The current age of the person

Without these three attributes, a financial goal is incomplete.

For instance, a young working professional who intends to accumulate 'enough money' to go to the UK for postgraduate studies in a couple of years down the line, is not a reasonable financial goal.

With the three random scenarios that I have quoted, you can imagine how diverse each person's financial aspirations are. No two families or humans will have the same requirement (apart from retirement maybe). Financial goals are extremely diverse and very personal to your situation.

However diverse the situation is, the good thing is that you eventually have to look at mutual funds to help you solve the situation, well, at least in most cases.

Of course, there are other financial instruments, but nothing as versatile as mutual funds (or ETFs).

Given this, there are two ways in which I can help you understand how to build a mutual fund portfolio to solve for your financial goals –

- Consider all sorts of life scenarios, build case studies around it, and stitch together a mutual fund portfolio to solve the given scenarios. You can then look at these scenarios, identify the one closest to your situation, and build a similar portfolio for yourself.

or

- Help you understand the different attributes of funds from a portfolio perspective so that you can identify what sort of funds to pick given the situation.

The difference between the two approaches is like this – assume you like savoury dishes, so I give you 20 different dishes to try. You taste each one of these and dishes and finally figure which one to eat fully.

Alternatively, I familiarize you with ten basic savoury ingredients. Once familiar, you can use these ingredients in the right measure to quickly prepare a savoury dish to satisfy your taste buds.

I will take the second approach to build a mutual fund portfolio, and I hope this works out better.

26.3 – Mutual Fund cheat sheet

I've prepared this Mutual fund cheat sheet for you. The sheet summarizes all the key attributes of the different mutual funds we have discussed. Please click on the image to enlarge and get a better view.

Fund Name	Category	Expected CAGR	Minimum Holding Period	Special Remark
Axis Equity Fund	Equity	12%	1 year	
Axis Midcap Fund	Equity	15%	3 years	
Axis Smallcap Fund	Equity	18%	3 years	
Axis Dividend Yield Fund	Equity	10%	1 year	
Axis Long Term Equity Fund	Equity	12%	5 years	
Axis Focused Equity Fund	Equity	14%	3 years	
Axis Infrastructure Fund	Equity	16%	3 years	
Axis Healthcare Fund	Equity	17%	3 years	
Axis Technology Fund	Equity	19%	3 years	
Axis Green Fund	Equity	13%	3 years	
Axis Water Fund	Equity	14%	3 years	
Axis Energy Fund	Equity	15%	3 years	
Axis Automobile Fund	Equity	16%	3 years	
Axis Chemicals Fund	Equity	17%	3 years	
Axis Pharmaceuticals Fund	Equity	18%	3 years	
Axis IT Fund	Equity	19%	3 years	
Axis Media & Entertainment Fund	Equity	20%	3 years	
Axis Consumer Goods Fund	Equity	14%	3 years	
Axis Financial Services Fund	Equity	15%	3 years	
Axis Real Estate Fund	Equity	16%	3 years	
Axis Infrastructure Development Fund	Equity	17%	3 years	
Axis Infrastructure Capital Fund	Equity	18%	3 years	
Axis Infrastructure Debt Fund	Equity	19%	3 years	
Axis Infrastructure Equity Fund	Equity	20%	3 years	
Axis Infrastructure Bond Fund	Equity	21%	3 years	
Axis Infrastructure Hybrid Fund	Equity	22%	3 years	
Axis Infrastructure Multi-Asset Fund	Equity	23%	3 years	
Axis Infrastructure Alternatives Fund	Equity	24%	3 years	
Axis Infrastructure Private Equity Fund	Equity	25%	3 years	
Axis Infrastructure Venture Capital Fund	Equity	26%	3 years	
Axis Infrastructure Hedge Fund	Equity	27%	3 years	
Axis Infrastructure Private Debt Fund	Equity	28%	3 years	
Axis Infrastructure Private Equity & Debt Fund	Equity	29%	3 years	
Axis Infrastructure Private Equity & Debt & Alternatives Fund	Equity	30%	3 years	
Axis Infrastructure Private Equity & Debt & Alternatives & Hedge Fund	Equity	31%	3 years	
Axis Infrastructure Private Equity & Debt & Alternatives & Hedge & Venture Capital Fund	Equity	32%	3 years	
Axis Infrastructure Private Equity & Debt & Alternatives & Hedge & Venture Capital & Hedge Fund	Equity	33%	3 years	
Axis Infrastructure Private Equity & Debt & Alternatives & Hedge & Venture Capital & Hedge & Hedge Fund	Equity	34%	3 years	
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Axis Infrastructure Private Equity & Debt & Alternatives & Hedge & Venture Capital & Hedge & Hedge & Hedge & Hedge & Hedge & Hedge & Hedge Fund	Equity	39%	3 years	
Axis Infrastructure Private Equity & Debt & Alternatives & Hedge & Venture Capital & Hedge & Hedge & Hedge & Hedge & Hedge & Hedge & Hedge & Hedge Fund	Equity	40%	3 years	

The table is simple, has few basic information –

- Fund type
- Category
- The main constituents of the fund
- Expected CAGR – as much as I hate it, I've included this 😊
- The minimum holding period – the minimum holding period for the fund if you were to invest in it. Not that you cannot invest in the fund and hold it for less than the minimum holding period, it is just that if you do so, recovering from a drawdown could be difficult.
- Financial Goal – The kind of financial goal the fund can be used for, more on this later.
- 'Special remark' – Things you need to be aware of.

I'd suggest you keep this table handy. This table will help you craft a mutual fund portfolio for most of the financial goals.

Before we proceed further, we need to understand an important aspect of the number of funds one should have in a portfolio.

I've seen investors with 10-12 mutual funds in their portfolio for a single financial goal. Usually, their portfolio will contain 3-4 large-cap funds, another 3-4 mid-cap funds, few random debt funds, and perhaps a hybrid fund tucked in.

This is a classic example of a messy, directionless, and a pointless portfolio.

Ideally, you need to have non-overlapping mutual funds to avoid redundancy.

Let me explain, assume you have the following three large-cap funds in your portfolio –

- Axis Bluechip fund
- Mirae Asset Large cap fund
- Canara Rob Blue chip Equity.

All three funds are good, but does that mean all the three funds should belong in your portfolio. Take a look at the top 10 holdings across all the three funds –

Portfolio (Dec 2020) :

Stock	Axis	Canara	Mirae
HDFC Bank	10.94%	9.30%	11.23%
Bajaj Fin	10.38%	3.68%	
Infy	8.58%	7.49%	8.34%
Kotak Bank	7.63%	2.53%	
TCS	6.52%	4.11%	3.79%
RIL	5.69%	7.07%	9%
ICICI Bank	5.30%	7.26%	7.46%
Dmart	4.97%		
HUL	3.31%		3.38%
Nestle	3.28%		
Common Total	55.04%	41.44%	43.20%

As you can see, nearly half the portfolio across all these funds are similar. All funds hold HDFC Bank to the extent of 10%. If you extend this across all the portfolio holdings, I'm sure the common overlap would be a much bigger number. Given this, the performance across these funds also tend to be similar. The economic/market factors that impact these funds will be similar, and the volatility will be similar.

Hence, as an investor, if you buy multiple funds of the same type across different AMCs, then you need to realize that there is no significant advantage in you doing so.

Of course, the only argument for having two funds of the same type is AMC diversification, where you split your money across two different AMCs. You can probably do this if you worry that one of the AMCs may fold during the tenure of your investment.

The better way to do this is to see if you can include funds from different AMC, such as a large-cap fund from HDFC and a mid-cap fund from DSP, where you diversify across AMCs and market capitalizations.

As an investor, build your portfolio so that the overlap between funds is minimum. Eliminating overlap is very tough; the idea is to ensure its minimum. Otherwise, you just end up paying just to get the same exposure and costs can eat into your returns significantly.

26.4 – Portfolio, by the method of elimination

Let us revisit the scenarios we looked at earlier and see how the table can craft a mutual fund portfolio.

Case 1 – A newly married couple, aspires to buy an apartment, estimated at 1.5Cr in 10 years. Both of them work, hence can save 30K each, every month.

We have the following data –

1. Savings per month – 30K each
2. Target corpus – 1.5Cr
3. Time available – 10 Years
4. Age – Young can afford to take financial risks in life.

Given this, let us try and arrive at the portfolio by the method of elimination. I find the elimination technique quite powerful; if not for anything, the technique helps us avoid the wrong fund for the given financial goal.

Alright, with ten years' time frame, we know that investing in debt is not required, so let us eliminate the debt category.

When I say debt is not required, I mean not required as the main investment fund. Let me get back to this in a bit. Debt has another role to play here.

The focus is clearly on Equity as the category. Within Equity as a category, we have a list of schemes available, which we need to start eliminating –

- Large & Midcap – may not work, since most of these 'Large & Midcap funds' are mid-cap stocks anyway.
- Small-cap funds – These are risky, volatile. Of course, ten years is a good enough period for this fund, but I'd personally avoid given the quantum of volatility involved in these funds.
- Multi cap funds – These are again qazi mid, and small-cap stocks, may as well stick to a straight forward mid-cap fund.
- Focused fund – Concentrated bets. Highly dependent on fund manager skills. If the fund's investment turns out to be a mistake, the realization may come in a bit too late.
- Thematic funds are sector dependent; if the call on sector goes wrong, the fund will take forever to recover.
- ELSS funds – Useless one needs to save on taxes as well.
- Index funds – While this is a great option, somehow, a strict 10-year period may not do justice for these funds. These funds are best used for hyper long-term financial goals like retirement.

Given the rationale, we can eliminate all the above funds, which leaves us with the following options –

- Large-cap fund
- Mid-cap fund
- Value fund

I'd further eliminate the value fund due to the uncertainties involved in unlocking value stocks. Hence, the best option for the couple is to invest in a large-cap and mid-cap stock.

They both can choose a fund each across both these categories and start their investment journey. Do recall we have discussed how to select an equity mutual fund in the previous chapters.

The easiest way to invest the funds would be a systematic investment plan (SIP) in the selected mutual funds every month.

So how do the numbers stack up assuming a CAGR of 10%? Take a look at the calculation table below. Note, this is not the entire table, it is just a part for you to get the idea –

No of Months	SIP amount	Future Value
120	60,000	1,55,625
119	60,000	1,54,393
118	60,000	1,53,172
117	60,000	1,51,960
116	60,000	1,50,758
115	60,000	1,49,565
114	60,000	1,48,382
113	60,000	1,47,208
112	60,000	1,46,044
111	60,000	1,44,888
110	60,000	1,43,742
109	60,000	1,42,605
108	60,000	1,41,477
107	60,000	1,40,358
106	60,000	1,39,247
105	60,000	1,38,146
104	60,000	1,37,053
103	60,000	1,35,969
102	60,000	1,34,893

Expected CAGR	10%
Sum accumulated (INR Cr)	1.21

I've assumed a CAGR of 10% for both large-cap fund and mid-cap fund, of course, we can argue endlessly on how conservative/aggressive this return percentage is, but it would be a waste of time for both of us.

As you can see, the couple accumulates 1.21Cr, which is quite close to the target funds over the 10-year window. A bank loan can plug in the deficit (which is not much).

Now, here is another aspect to consider. What if, as and when you approach the target year, the market starts to fall and you lose the accumulated wealth? This is a possibility; after all, no one can time the market.

One way to deal with this is to start to shift the corpus funds to a debt fund as and when you start approaching the target year. For example, from the 8th year onwards, they can withdraw the accumulated funds and park it in a debt fund. There are many different ways to do this –

- Withdrawal can be made on a monthly/quarterly/semi-annual basis.

- The funds withdrawn, can go into an ultra short term fund since we only hold the funds for 3 years.

The idea here is to protect the corpus from a sequence risk, where in the market takes a hit as and when the target year approaches.

Of course, this is a rather simplified approach, but I'd like to keep it simple and not over complicate it.

You may ask if this a 'fill it, shut it' approach with no intervention during the investment tenure. Yes, this is largely a fill it and shut it approach. But once in a way (like once a year), one should track the fund's performance and take a call on continuity.

Apart from that, you need to keep these two points in mind –

- Use conservative estimates when dealing with returns in personal finance. If in the end, the returns turn out better, then it is good for you. Consider yourself lucky.
- You need to understand that the equity returns are lumpy and not smooth and steady like a bank FD returns. You may have no returns for a long time, but the bulk of the returns will come in a short burst of times. Unfortunately, no one can time this short burst, hence the need to SIP and give it adequate time.

Let us look at another case and see how elimination would help us build a Mutual fund portfolio.

Case 2 – A 40-year-old person wants to save 25L over the next eight years for the kids' overseas postgraduate degree. Monthly savings available for this goal is Rs.20,000/-

Since the period is less than ten years, there is no point looking at 100% equity investment. The plan would largely involve debt, maybe a small equity portion.

Ok, to begin with, let us keep Equity aside for now and look at the rest of the funds.

Hybrid funds like the Arbitrage fund may be a decent option, but something like a balanced fund may not be.

Debt funds are a good option –

- Liquid funds and overnight funds won't fit the bill since we are talking about eight-plus years
- All funds with Macaulay duration of fewer than two years can be ignored since these are relatively shorter maturity funds.
- Money market funds too can be ignored since the investor can take on a slightly higher degree of risk
- A short-duration fund is an option
- Credit risk is risky so that they can be avoided.
- Corporate bonds fund is an option
- GILTS won't fit the bill either.

This leaves us with three good options –

- Arbitrage Funds
- Short duration funds
- Corporate bond funds.

Investment in a corporate bond fund requires a greater degree of involvement from the investor. If one decides to invest in it, then a regular review of the scheme's portfolio is mandatory. If this is not possible, then the only two options to invest in the short duration fund and the arbitrage fund. Probably the person can split the investment equally in both these funds.

One thing to note, just because the investment is in a short duration fund and arbitrage fund, it does not mean that a period review of the fund's portfolio is not necessary. Yes, the short duration fund may not need as much scrutiny as a corporate bond fund, but it does require you to look at, at least once a quarter. The arbitrage fund too as the portfolio contains a debt portion.

I'll spare you the maths here, but if you assume a 7% CAGR, the target funds can be accumulated over the given timeframe.

Since this is anyway a longish tenure, i.e. 8 years, one can also consider a little equity exposure. Maybe 20-25% of the monthly SIP can go into a large-cap fund.

Let us take up one last case – You've received a lump sum amount, say Rs.50L from the sale of an asset, maybe real estate. You want to use this amount and start a retirement corpus. However, you are worried about the current state of markets and fear that the current market level is unsustainable.

Retirement is a hyper long-term financial goal. By hyper long term, I mean 20 plus years but may vary based on your current age.

Here is a plan assuming you are not comfortable investing the lump sum right away.

- Invest the lump sum in a fund which offers capital protection (to the best possible extent)
- Withdraw chunks of it every month and invest that into the designated fund for retirement
- Continue doing do so till you deploy the entire capital

In this case, you can decide to invest 50L over 3/6/12 months, based on your comfort.

Assuming, six months, then every month you will invest –

$5,000,000/6$

= 83.3K.

The question is, what is the choice of funds for such a plan of action.

- We need a **carrier fund**, which will hold the capital, provide adequate capital protection over the next six months.
- The only funds which fulfil the purpose of the carrier funds are – the overnight or liquid fund.

- Identify a target fund for retirement. Recall, retirement is a hyper long-term financial goal so the funds you pick for this purpose should fit this bill
- The best funds for retirement (in my opinion) are Index funds, large-cap funds, or just a balanced fund.

So the set up here would look like this –

- Park the entire 50L in a liquid fund to redeem the entire amount over six months
- Redeem 83.3K every month from the liquid fund over the next six months
- Invest the funds redeemed funds into the retirement fund – say a Balanced Fund and a Midcap fund. Or an Index fund and a mid-cap fund.
- If you are choosing two funds, the funds can be split equally.

Do remember, once you invest in these funds, this is largely on autopilot mode with no frequent intervention required from your end. However, you may need to look at the following –

- Yearly review of performance – ensure your fund is not lagging its peers and behaving more volatile compared to the rest of the category

- You may want to rebalance based on your risk appetite, wherein you book some profits from the equity funds and deploy the same in debt funds.

Apart from the above two, you are fairly set. Please don't attempt anything else, and let the market do what it is supposed to do.

I'll stop the case studies here since it is impossible to cover all sorts of cases. But I hope this chapter has given you a good starting point for designing your mutual fund portfolio.

I'd love to dig deeper on this topic of goal-based investing, but at this stage, I'm not sure if I will take that route. If you do want me to do that, share your comments below.

Over the next 2 or 3 chapters, I'd like to discuss the Sovereign gold bonds (SGB), NPS, and perhaps a bit about asset allocation, and wrap up this module.

Key takeaways from this chapter

- The first step in personal finance is to ensure you have health and term insurance
- 2nd most important aspect is to ensure you have an emergency corpus

- The financial goal is defined by the amount of corpus required and the time frame available to accumulate the corpus
- One of the easier ways to build a mutual fund portfolio is by using the method of elimination
- Always use a conservative approach and tone down your return expectations
- Try and avoid having multiple funds of the same subcategory, have a minimum non-overlapping portfolio instead
- A common goal for all us to have a retirement corpus
- Once a portfolio is set, a yearly review of the funds is more than sufficient
- Do not over complicate mutual fund portfolio construct

CHAPTER 27

Smart-beta Funds

27.1 – Overview

Before we get started with this chapter, I need to inform you that this chapter (and the chapter on Index funds) is not authored by me (Karthik). These two chapters are authored by Bhuvan, a brilliant colleague of mine, who is quite knowledgeable on this topic and asset management in general.

In fact, the next chapter on asset allocation will be authored by another gentleman (and a good friend of mine) from the industry who is super knowledgeable about everything related to market finance.

I'd like to thank these folks for helping me with this module and sharing their wisdom with all of us.

Read on.

—

In chapter 6 & 7, we discussed the basics of a mutual fund and how it works. In chapter 16, we specifically talked about index funds. I had mentioned that we would discuss a relatively new category of funds in the Indian context called smart-beta funds and ETFs, but this got delayed. The idea with this chapter is to give you a working knowledge of these funds.

The term smart-beta evokes a lot of strong opinions among investment professionals. Although it sounds fancy, it largely means nothing and is largely a marketing term. Smart-beta broadly speaking is a catch-all term for factor investing and any weighting methodology which deviates from traditional market-cap weighting. If you remember from the previous chapter on index funds, an index fund tracks a market-cap-weighted benchmark like a Nifty 50, Nifty 500 etc.

Just as a refresher, a market-cap-weighted index weights stocks based on their market cap (outstanding shares X current price). Higher the market cap, higher the weight in the index. Nifty 50 is an example.

Similarly, there are ETFs based on fundamentally weighted indices. For example, an index that weights stocks based on earnings, a combination of fundamental metrics such as earnings, dividends, profitability etc.

27. 2 – What is a factor; you might be wondering?

A factor is a broad, persistent driver of the returns of a stock. Put another way, in factor investing, you target securities that exhibit a particular characteristic that drives their returns. Remember this definition, and we'll come back to this in a bit. But before we do, it is also important to understand a little bit of history for context.

Factor investing results from continued academic research starting with the Capital asset pricing model (CAPM), efficient markets hypothesis (EMH) etc. CAPM states that a single factor, the market factor or beta, drives returns, but this didn't stick. Factor investing became mainstream when Eugene Fama

and Kenneth French published their landmark research paper *The Cross-Section of Expected Stock Returns*.

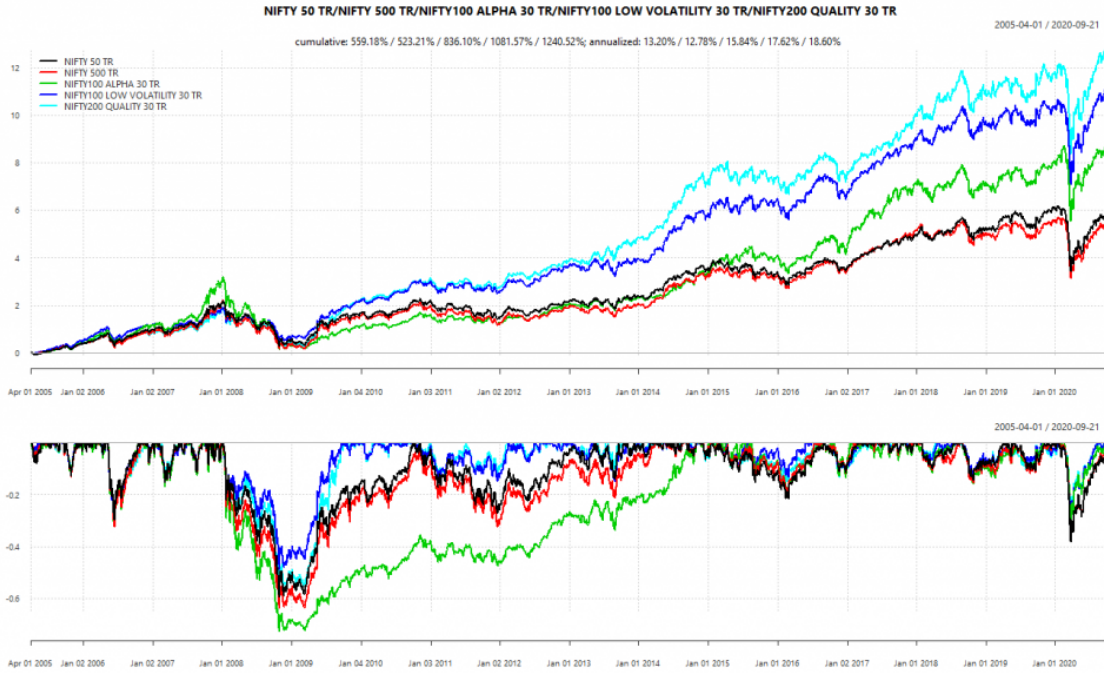
In the paper, Fama and French added two more factors – Value and size and market factor. This meant that there were other drivers of stock returns than just market risk; this was what came to be known as the Fama French 3-factor model. In 2014 this became a 5-factor model when two new factors—profitability and investment factors were added.

Apart from the famous Fama French factors, other factors like Momentum and Low Volatility also have been discovered. What do these factors mean? Here's a nifty explanation from Robeco of the most commonly used factors:

Value The tendency of inexpensive securities, relative to their fundamentals, to outperform over the longer term.

Momentum The tendency of securities that have performed well in the recent past to continue to perform well, and for securities that have performed poorly to continue to perform poorly.

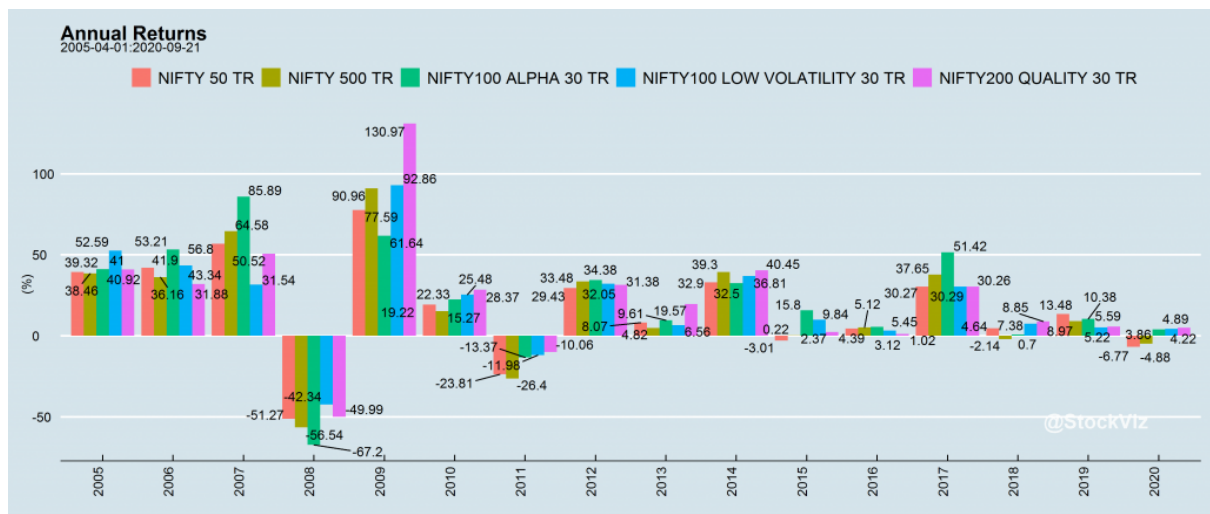
Low risk Refers to the observation that low-risk securities tend to earn higher risk-adjusted returns than high-risk securities.



The charts are from Shyam who runs Stockviz.

Impressive returns all around. Low volatility, in particular, has been impressive with shallow drawdowns. Nifty Alpha, a proxy for momentum has been impressive but comes with sharp drawdowns.

Here are the annual returns for a more granular look.



The charts are from Shyam who runs Stockviz.

But, it's also important to understand why these factor premiums exist in the first place. There are broadly 3 reasons market practitioners and academics propose:

Risk-based: Factor premiums exist because investors need to be compensated for the additional risk they bear. For example, academic literature shows that value stocks, i.e. cheap stocks, tend to outperform expensive stocks over the long run. But cheap stocks more often than not tend to be cheaper because they have a higher chance of going bankrupt. Or in the case of an economic downturn, value stocks will be the first ones to go out of business.

Behavioural-based: This camp believes that these factor premiums exist because of behavioural biases among investors. For example, this camp says that the value premium exists because investors chase glamorous growth stocks and ignore cheap stocks, i.e. your value stocks. Similarly, this camp believes that the momentum effect exists because of investor under-reaction and overreaction. They under-react to good news or good earnings and then over-react, causing a feedback loop which pushes prices higher.

Structural issues: This camp says that factor premiums exist because of structural reasons like illiquidity, high transaction costs, difficulty in applying leverage etc.

Like with all things, it's not just one thing, and it might be a combination of multiple reasons. Humans are complex beings, and the markets are complex adaptive systems. It would be unwise to conclude anything else.

At this point, you might have ignored everything I just wrote after the charts because the returns look so good. But, not so fast. In investing there are no free lunches except for diversification probably.

27.3 – Smart-beta funds in India

Smart beta or factor funds are relatively new in India. The first smart beta ETFs were just launched about 4-5 years back. There are a few quant funds from Reliance, Tata, and DSP. But unlike a smart beta ETF, the methodologies of these funds aren't fully transparent.

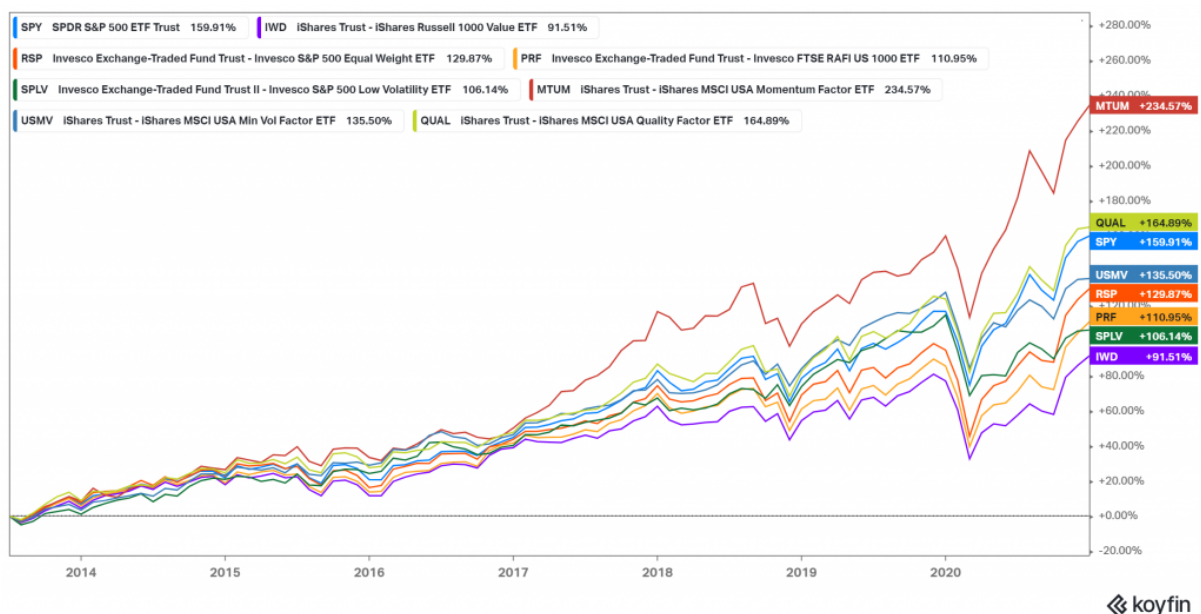
Having said that, these are just index returns, and real-life trading performance is always different due to costs, slippage, changes in market microstructure etc. Our markets have evolved a lot since 2005 from when these indices start. You could argue that they have become a lot efficient.

Given that we are just seeing the launch of the first few smart-beta funds in just the last few years, we don't have a lot of live trading data yet. But here's how quality, value, and low volatility ETFs have performed vs Niftybees




This data is from 2019, and it's not a lot to conclude, but it is evident that not all factors perform all the time.


Factor or smart beta ETFs have a longer trading record in the US and here's how some of the popular smart ETFs have performed vs the S&P 500. Of course, this chart is subject to starting point bias because this was the point from which continuous trading data was available for all major factor ETFs but didn't change the conclusion.



As you can see, factors are cyclical and can go a long time underperforming simple broad market index funds. Here's data in the Indian context, notice how the top factors keep changing.



Factors keep on rotating year on year



2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 (YTD)
31.1	-12.0	38.3	21.0	48.7	10.8	7.6	57.5	11.6	11.0	8.6
25.4	-14.3	33.3	13.4	39.1	10.0	4.7	37.7	8.2	8.6	7.7
24.9	-15.8	31.9	13.1	38.2	4.6	4.2	35.8	6.0	8.6	6.4
24.7	-16.1	31.0	11.8	36.6	3.6	4.0	31.8	5.8	7.6	5.8
18.2	-20.9	27.0	6.2	35.0	0.0	2.9	30.3	-1.5	5.6	3.6
15.2	-26.4	26.7	3.9	32.6	-5.8	2.1	23.5	-1.6	5.4	-1.7

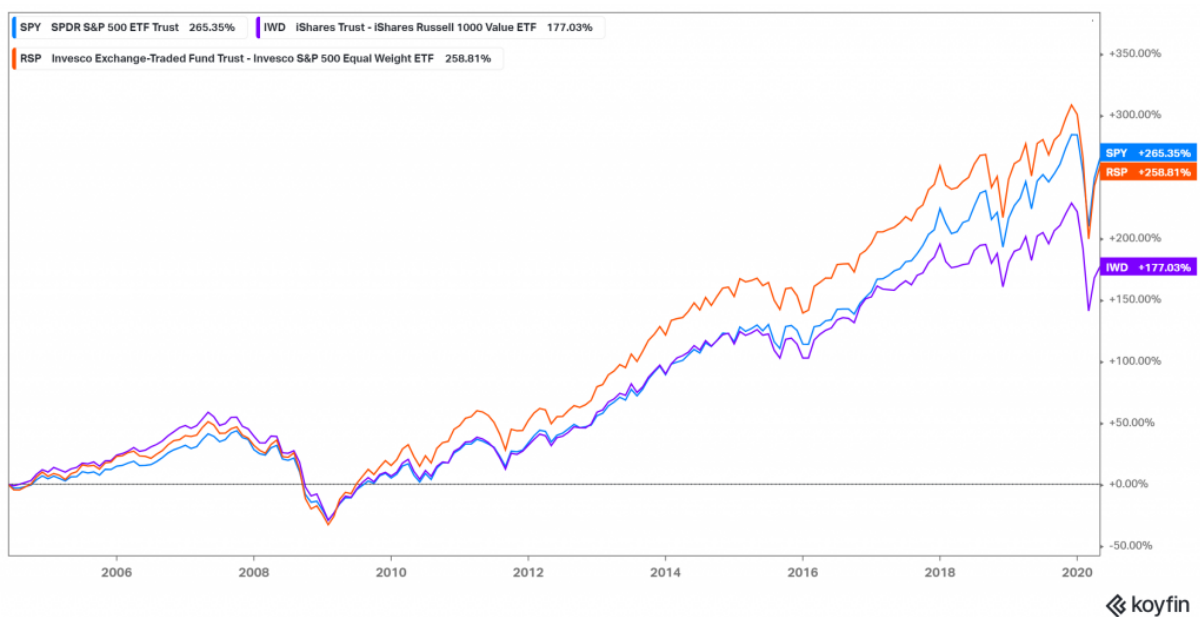
The factor that plays out keeps on changing every year. Value played out in 2010 and then directly in 2018 while Momentum played out from 2014 through 2017.

Index Name	FACTOR
Nifty 100 Low Volatility 30 TRI	Volatility
NIFTY 100 Quality 30 index TRI	Quality
Nifty 50 Value 20 TRI	Value
Nifty 200 Momentum 30 TRI	Momentum
Equal Weight To Each Factor	
Nifty 500 TRI	

Past performance may or may not sustain in the future. The performance of the scheme is benchmarked to the Total Return variant of the Index. 2020(YTD): As of October 31, 2020. Source: www.nseindices.com

ICICI Quant Fund presentation

Value (IWD) has underperformed the S&P 500, dominated by growth stocks for over a decade now. Mind you; I'm using these US examples since the data is readily available and the Indian markets aren't the same as the US.



Now imagine if you had put 100% of your money in value, not that many would. Now bear in mind that, no two factors ETFs are the same. Each factor can be defined and implemented in 100 different ways. For example, as defined in Fama and French's paper, the value was the price to book, but each value ETF or index has a different methodology such as price to sales, EBIT/TEV, forward earnings, or a mix of value metrics. This leads to a wide dispersion in returns among the same or similar funds.

27.4 – Do smart-beta funds work?

There are broadly speaking two views of thought. On the sceptical side, many people view factors as backtests and that they are a result of data mining that doesn't work as advertised. Then, there are a few who believe that they might have worked in the past but don't anymore.



On the other side, you have true believers in factors. Several asset management companies manage 100s of billions on factor strategies. Dimensional Fund Advisors (DFA) was most notable among them, which was

founded by David Booth and managed over \$500 billion in assets in various factor strategies. David Booth was a student of Eugene Fama at the Chicago School of Business. Fama also serves on the board of DFA.

I personally think that factors do work overtime, but the factor premiums aren't static; they ebb and flow over time. You have to bear a lot of pain for that premium and have really long-term horizons to harvest that premium.

Having said that investors also must be cognizant that the markets have indeed changed and keep changing over time. In the 90s, when the first factors were discovered, you could argue that the markets still had many inefficiencies and retail investors still made up a good chunk of the markets.

Today, everybody has all the data at the click of a button on smartphones, and there are millions of CFA holders, hedge funds that manage trillions of dollars constantly seeking new inefficiencies. Even in India, mutual funds, PMS', AIFs, HFT traders, institutions have become dominant players in the markets.

Have the factors been arbitrated away? Unlikely, investors shouldn't just look at past returns of indices and backtests and have the same expectations. The probabilities are the premiums might not be as large as they seem.

The proliferation of data and computing power has also led to 100s of new factors resulting from data mining. If you look at the backtests of some of these factors, they look amazing, but they are spurious at the end of the day. Practitioners and academics have termed this as the "factor zoo".

27.5 – Should you invest in smart-beta funds?

I do not think investing 100% of your equity allocation in smart-beta funds is a good idea. Nor do I think that smart-beta funds should be viewed as replacements for index funds or **good** diversified active funds that **perform consistently** – emphasis on good and consistent.

But we've seen in the previous chapter on index funds that a vast majority of active funds don't beat their benchmarks. I do think smart-beta funds are a good replacement for poorly managed discretionary active funds. The bulk of your equity allocation should be good consistent diversified active equity funds or in index funds. And then you can invest in smart-beta funds for that chance of extra returns.

But do remember, factors can go a long time underperforming simple index funds. These premiums are also sensitive to the amount of money chasing them. So, as more such funds are launched in India, and more money flows into them, the factor premiums might not always be as large as they once were. Remember, there are no free lunches in the markets, and every choice you make as an investor comes with trade-offs. You need to endure that pain if you hope to harvest those additional returns, say, a simple index fund.

One solution is to diversify among factors, there are multi-factors funds that invest in multiple factors, but we don't have many of those in India yet. ICICI alpha low volatility ETF, which was recently launched, combines two momentum and low volatility. Similarly, DSP Quant Fund and the likes of Tata Quant Fund also are multi-factor funds. But their methodologies aren't as transparent as index-based smart beta ETFs.

We see AMCs slowly launching these funds, and hopefully, we'll have more choices in the next couple of years.

Key Takeaways from this Chapter

- The idea with this chapter was to give you a working understanding of smart beta and factor investing. I think you need to dive deeper if you wish to allocate to these funds. There are some amazing resources on factor investing, and a cursory Google will surface them. Please dive deeper before investing in these funds.
- Smart beta is just a marketing term. There is no smart beta or dumb beta.
- Smart-beta funds are nothing but factor funds or funds that have alternatively weighted indices unlike Nifty 50 which is market-cap-weighted
- The live performance of factor funds can be different than the indices.
- Factors can be highly cyclical, and individual factors can underperform simple diversified funds or index funds for decades.
- If you want to invest in factor funds, diversification among factors is an important consideration.

CHAPTER 28

Asset Allocation, An Introduction

Dear Readers,

Like this previous chapter, this chapter too is a guest chapter. We are honoured to have this super important chapter authored by Shyam, who runs Stockviz. We are grateful to Shyam for sharing his wisdom on this topic with us. We hope he can contribute more to Varsity, and enrich Varsity's content 😊

Happy reading!

Karthik Rangappa.

28.1 – Asset Allocation, an Introduction

An asset is anything that you own. A liability is something that you owe.

An asset can be anything: livestock, gold, stocks, bonds, collectables, art, copyrights, trademarks, and so and so forth.

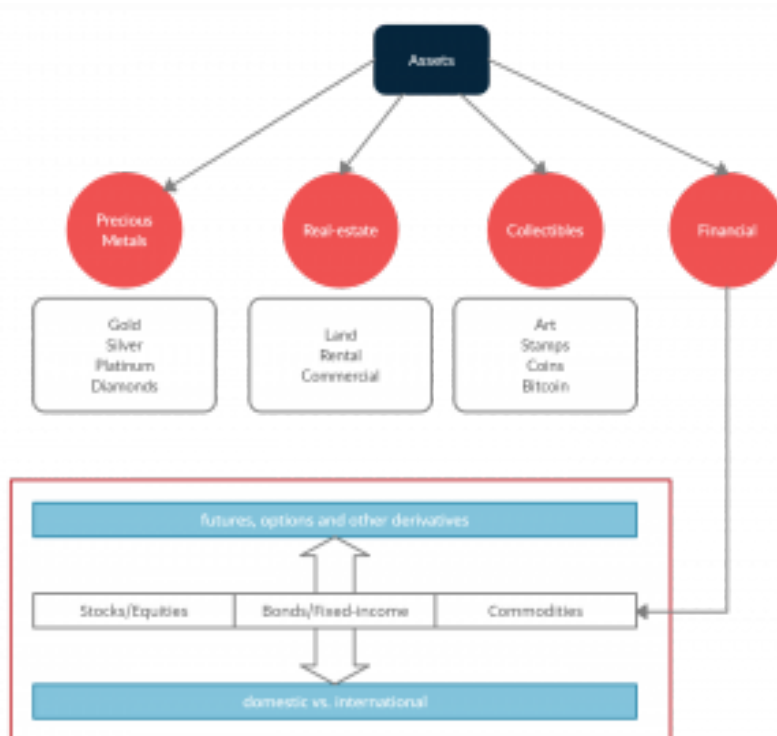


Some assets (bonds, for example) throw-off cash (pay interest) when you own them, some (art, for example) don't. The basic purpose of owning an asset is to transmit wealth through time.

Time value of money

Money, in the form of currency, is designed to depreciate over time. Central Banks call this rate of depreciation their “inflation target.” For example, when the US Fed says that they are targeting 2% inflation, the purchasing power of a \$100 note will be \$98 next year. In India, RBI's goal is to manage inflation between 4% and 6%. We ended the year 2020 with an inflation rate of close to 7%. Clearly, stuffing money under a mattress is a loser's game. So, how do you preserve the purchasing power of your wealth? You buy *assets*, of course.

Different type of assets



Precious Metals

Since the dawn of civilization, people have been trying to find cost-effective ways to store, transport and exchange wealth. It took a while for us to zero-in on gold and silver as a medium of exchange and a store of wealth:

- They are rare, ensuring a limited supply.
- Takes work to mine, purify, mould, etc. This puts a floor on additional supply.
- Easily understood, measured and assayed.
- Sufficiently dense so that small quantities representing large notional values can be moved around easily.

So, it shouldn't come to a surprise that most people still think of gold (and precious metals, in general) as a *must-have* asset. Investors instinctively reach

for gold when other assets are facing stress. And for savers in countries with a long history of socialism with their governments trying to confiscate property and inflate away their currencies, gold forms a large part of their savings.

Real-estate

Broadly, real-estate investing covers land speculation, rental-housing and commercial property. They each have their unique characteristics and scale requirements. Each piece of real-estate is different – they are not fungible, like precious metals, nor can they be transported. So every real-estate investor's experience will be different.

Collectables

Well, known pieces of art, baseball cards, stamps, rare-coins etc. are known to hold their value through time. A mature ecosystem of services that curate, authenticate, promote and store collectables exists to make investing in them relatively painless.

Over the last decade or so, we have seen the rise of *digital* collectables, like bitcoin. They have the added benefit of being infinitely divisible. To use the bitcoin example, even though a single bitcoin is currently worth north of \$40,000, a newbie can buy just \$10 worth of it.

Financial Assets

Assets that can be traded on an exchange, like stocks, bonds, commodities, etc. benefit from standardization and the uniform application of laws and regulations. Standardization ensures that investors always get what they paid

for and regulations ensure that the exchange doesn't favour one investor over another while disseminating information, clearing trades, etc.

The most liquid and popular of these assets are stocks/equities, the largest are bonds/fixed-income. Commodities come a close third. Overlaid on top of these are derivatives – instruments that *derive* their value from an underlying stock/bond/commodity – that are now a bigger market than the assets themselves.

Since the 1980s, the number of different asset types traded on electronic exchanges has increased by leaps and bounds. Assets that were once illiquid because of physical delivery requirements or geographical barriers have seen an explosion of liquidity as they are now traded through derivatives and ETFs.

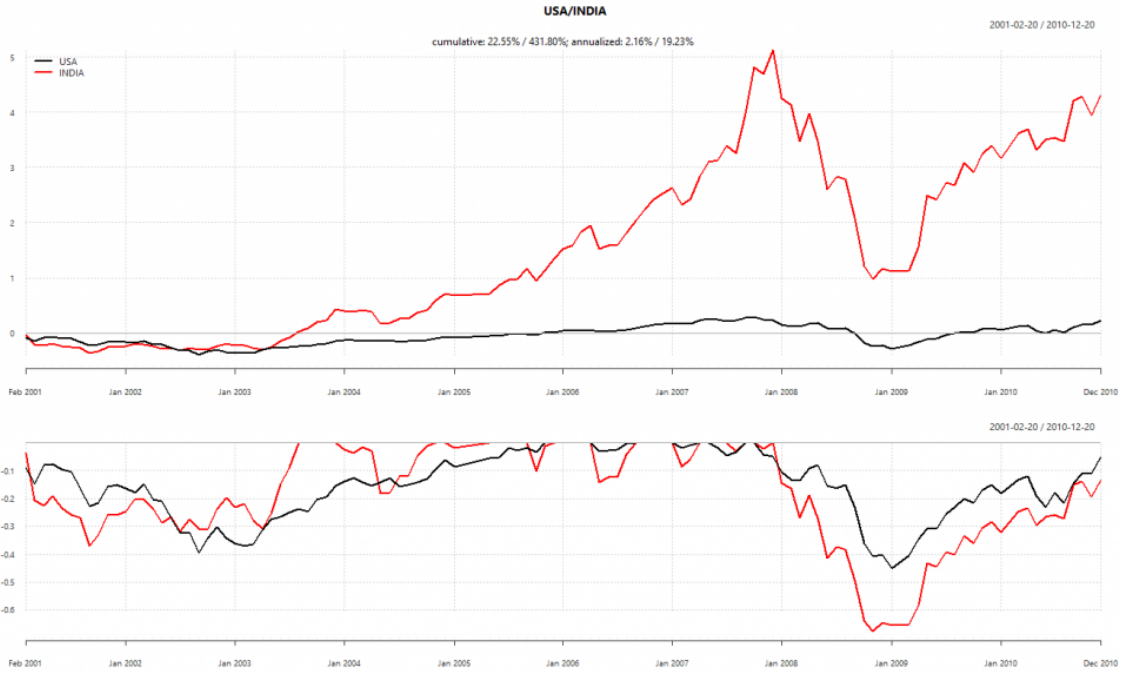
28.2 – Allocation

The act of splitting one's savings between the different types of assets described above is called “asset allocation.”

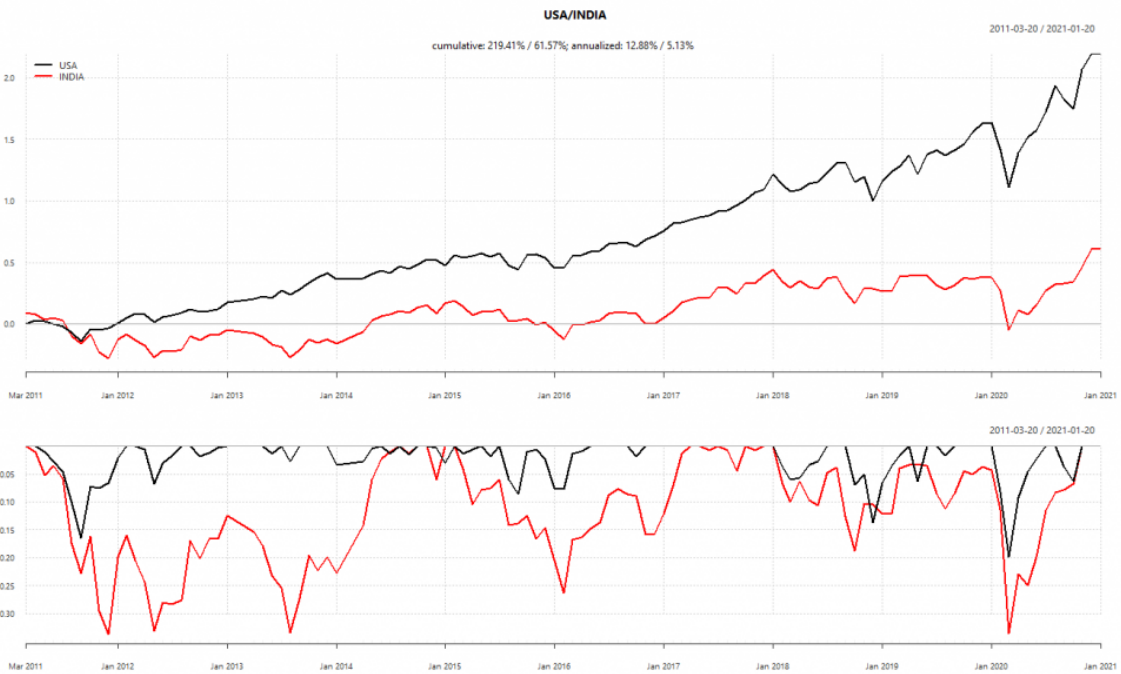
Prediction is impossible

If you knew which of the assets discussed above would give the best returns, then you could just put all your money in that single asset. But unfortunately, no one knows the answer to that question.

For example, take US and Indian stocks. For the decade between 2001 and 2011, Indian stocks massively out-performed US stocks.



But performance completely inverted in the next decade.



Who knows what is going to happen in the next 10 years?

Once prices start moving, narratives get built around why they are justified and persist forever. The longer the price moves, the stronger the narratives. Remember “India shining,” “secular stagnation,” “home prices always go up?”

The only way to protect yourself from decades of underperformance without having to predict is to buy a little bit of all assets.

28.3 – Sequence Risk

An average investor rarely sees average returns.

Markets have been around for centuries, but an investment’s lifespan is not more than a few decades. This leads to all sorts of misconceptions regarding averages and risk capacity.

Investor: On average, over the last 20 years, the NIFTY has given a CAGR of 10%. So, if I invest Rs 1 lakh for 5 years, I should get at least Rs 1.61 lakhs, no?

Me: No. Consider yourself lucky if you don’t lose money.

Investor: But it has given negative returns only 4 years out of 10. I can survive 2 years of negative returns.

Me: Let me tell you something about sequence risk. Sequence risk means that it is possible that you could have all of those negative 4 years during the 5 year period that you have invested.

	Growth of 1	Sequence of returns ->										
Unlucky!	0.72	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Somewhat lucky	1.08	0.1	0.1	0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.1	0.1
Lucky!	1.61	0.1	0.1	0.1	0.1	0.1	-0.1	0.1	-0.1	-0.1	-0.1	-0.1

Most investors don't realize that while averages may be true in the aggregate, they may not survive long enough in the market for their personal experience to match up with the statistics.

A simple way to avoid this risk is to invest in a basket of assets whose returns are not correlated to each other.

28.4 – Diversification vs Diworsification



A basket with chicken eggs, turkey eggs, goose eggs, quail eggs, pheasant eggs and emu eggs is theoretically diversified but practically useless when the basket is dropped.

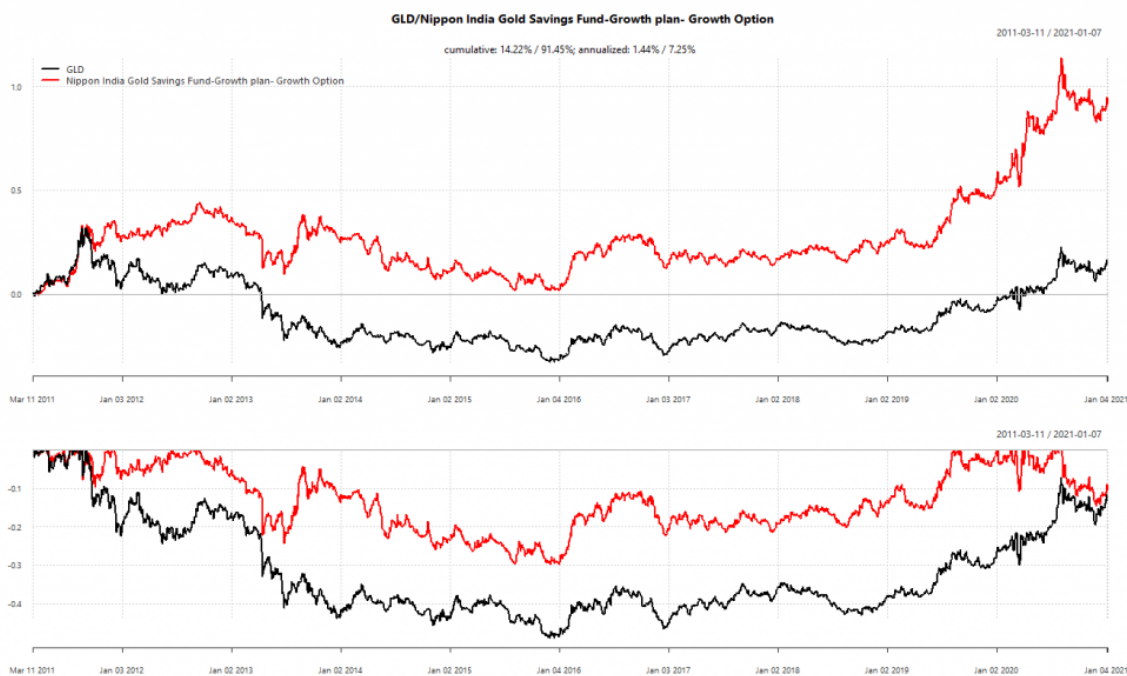
To create a diversified portfolio, you need first to understand the drivers behind each asset class's returns and how they interact with each other.

Vectors of diversification

Different vectors drive returns of different assets and the correlations between them. A well-diversified portfolio covers these different vectors with minimal overlap. Some examples below.

Currency exchange rates

Gold is priced in international markets, so its future price movements in India are both a function of global demand and USDINR exchange rate.



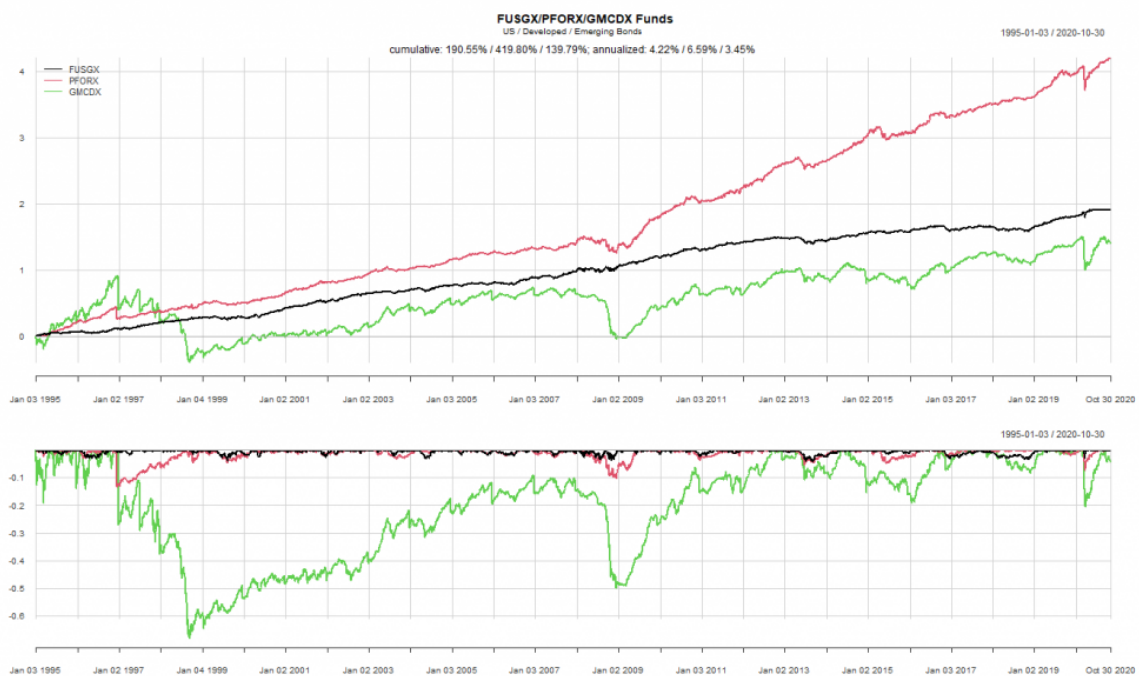
Market composition

“old economy” stocks mostly dominate Indian equity markets while that of America’s is dominated by tech (“new economy”) stocks. So they require separate allocations in a portfolio even though they are “stocks.”

Flows during panics

American bonds are “safe-haven” assets. During market panics, US bonds get bid up. However, Indian assets are clubbed along with other “emerging market” assets and sold-off. So, while having US bonds in a portfolio can cushion it during sell-offs, owning Indian bonds may not offer the same benefit.

Here’s how the US, Developed Markets and Emerging Market Bond funds have behaved through time.



Bubble assets

Some assets, especially digital collectables, are prone to boom-and-bust cycles. While Bitcoin gets all the press...

07/18/2010 to 01/09/2021

1h 12h 1d 1w 1m 3m 1y all



... the fact that CryptoKitties raised a total of \$23 million in venture capital funding and people thought paying money to collect and breed virtual cats on the blockchain was a good idea should give investors some pause.


 Wrapped CryptoKitties Chart

From Jun 26, 2019 To Jan 9, 2021



A similar dynamic exists in the art market as well, where investors try to spot emerging artists and bid up their works.

28.4 – Keeping it simple

If you are starting, you will do well to stick with big, liquid asset classes:

1. Indian Equities

- Large-cap Index
- Mid-cap fund

2. US equities

Since large US companies have significant global footprints, the S&P 500 index gives ample exposure to most developed worlds. Indian investors are unlikely to benefit much from chasing after European, Frontier or other Emerging markets.

3. Bonds

4. Gold

5. Real estate

If you are unsure of the relative proportions or you are just getting started, then an equal weight allocation between them is not such a bad idea.

For US stocks, stick to the cheapest S&P 500 index fund that you can find.

For Bonds, find a short-term bond fund that invests only in government or PSU bonds.

For Gold, go for the RBI issued Sovereign Gold Bonds that actually pays you 2.5% p.a. for owning gold.

For Real estate, see if exchange-traded REITs make sense.

28.5 -Risks to diversification

As more assets get financialized, building a diversified portfolio becomes easier and more accessible. But financialization also changes the behaviour of the assets themselves.

Using real-estate as an example, transactions in the real-world take months and involve a different set of actors than transactions on an exchange-traded REIT that take seconds. The low historical correlations that one might have seen between real-estate and stocks could've been a function of the different venues where they were transacted, lower liquidity, long transaction times and inability to cross-leverage. But once you put all these different assets on the same platform and allow investors to lever one asset to buy another, you end up increasing their correlations. So, while financialization makes it easier to diversify, it blunts its effectiveness.

Keynotes from this chapter

- One cannot avoid buying assets.
- Know the different types of assets, and the factors drive their returns.
- Draw-up an asset-allocation strategy (KISS: Keep It Simple, Stupid!)
- Stick to the allocation strategy because prediction is impossible.
- Nothing works all the time. The world around you changes. Be pragmatic.

CHAPTER 29

Exchange Traded Funds

Please note, this is a guest chapter, and I've not authored this. This chapter on ETFs is authored by my colleague, Bhuvan. However, I'll try and answer all the following queries that you'd post.

Happy learning,

-Karthik Rangappa.

29.1 – Overview

In chapter 7, we looked at what a mutual fund is and how it works. To recap, a mutual fund is a pooled investment vehicle that collects the money from various investors, invests and manages that money on their behalf. When you invest in a mutual fund before the order placement cut-off time, you will get the units as per the same day's NAV which is disclosed by midnight. If you invest after the order placement cut-off time, you'll get the allotment of units per the next day's NAV. Basically, everything happens at the end of the day.

Now, what if those mutual funds units could be traded on the stock exchange just like stocks like Reliance or Infosys? Just like a mutual fund, an exchange-traded fund (ETF) is a pooled investment vehicle that holds a basket of securities like stocks, bonds, and commodities and trades on the stock exchanges. You can buy and sell an ETF anytime, just like a stock.

There are a few more nuances to an ETF than a mutual fund, but before we dive in, I hope you have a working idea of what an ETF is.

29.2 – History of ETFs

Mutual funds have been around in some form for well over 100-years. The first open-ended mutual fund in the US was launched in 1924 and is still in existence today. The first mutual fund in India was launched in 1964. Mutual funds have democratized access to stocks, bonds, real estate and commodities globally to common investors. Exchange-traded funds (ETF) were the next evolution of mutual funds.

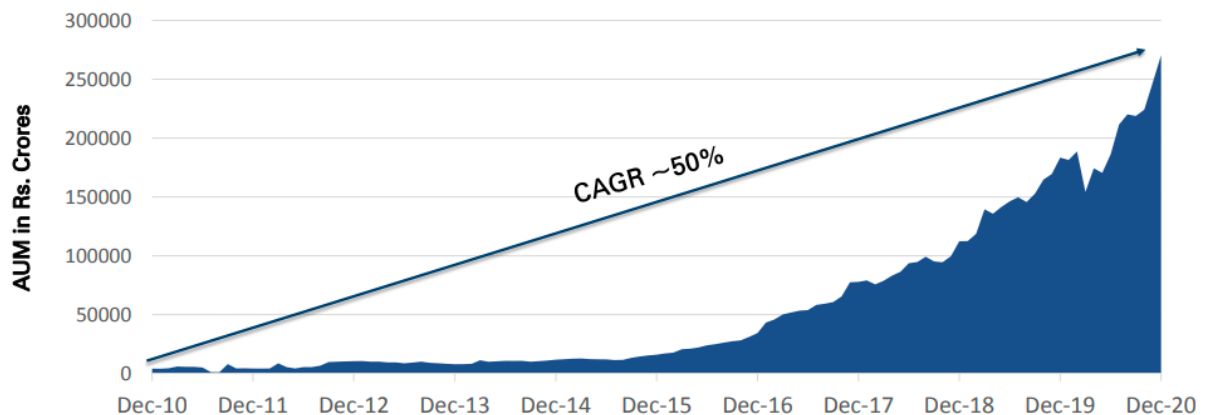
ETFs, on the other hand, are relatively new. The SPDR S&P 500 trust, arguably the first ETF, was launched in 1993 in the US. Coincidentally, it is today the largest traded security in the world. NiftyBeES, an ETF tracking the Nifty 50 index was the first ETF in India and was launched in 2000. It was launched by Benchmark AMC, which Goldman Sachs later acquired, which Reliance later acquired, which Nippon India Mutual Fund later acquired 😊

29.3 – ETFs in India

Though ETFs have been around for a while in India, they haven't really been popular among retail investors. ETFs have mostly been used by HNIs and institutions. For example, the SBI Nifty 50 ETF with Rs 89,441.55 cr is the largest mutual fund in India. This is almost entirely because this is one of the ETFs in which the Employees' Provident Fund Organisation (EPFO) invests.

A large part of the ETF AUM growth is due to:

- EPFO investing in Nifty & Sensex ETF
- Government divestment through CPSE ETF and Bharat 22 ETF
- Introduction and the Govt push for Bharat Bond Debt ETFs. Most of the AUM in these ETFs is non-retail.



Growth of ETF AUM in India

Though still a small piece of the pie, retail participation has been growing steadily over the years and so has the trading turnover on the exchanges.

NiftyBeES which is 20 years old, just has about Rs 2800 crores of AUM. There are a lot of reasons for the under penetration of ETFs:

1. India is still a tiny market. We just have about 1.7 crore active demat accounts, and unlike a mutual fund, you can only buy an ETF if you have a demat account.
2. Investment products, be it mutual funds or ETFs are push products. One of the reasons why mutual funds are larger than ETFs is because AMCs can pay distributors & platforms commissions to sell their mutual funds. But ETFs don't have commissions like mutual funds.

3. ETFs are also relatively trickier to understand initially compared to mutual funds. But we'll take care of that with this chapter.
4. Most AMCs rarely push ETFs because they have low margins and don't make sense with small AUMs.



29.4 – What is an ETF?

An exchange-traded fund (ETF), just like a mutual fund is a basket of securities, but this is where the similarity with a mutual fund ends. Unlike a mutual fund, an ETF trades throughout the day on the stock exchanges. You can buy and sell an ETF anytime you want just like a stock.

For example, if you search for “Nifty ETF” on Kite, you’ll see a list of all ETFs that track the Nifty 50 index.

Q Nifty ETF		4 / 50
NIFTYEES	EDELWEISS ETF - NIFTY 50	NSE
NIFTYBEES	NIP IND ETF NIFTY BEES	NSE
SETFNN50	SBI-ETF NIFTY NEXT 50	NSE
SETFNIFBK	SBI-ETF NIFTY BANK	NSE
SETFNIF50	SBI-ETF NIFTY 50	NSE
EBANK	EDELWEISS ETF-NIFTY BANK	NSE
QNIFTY	QUANTUM NIFTY ETF	NSE
EQ30	EDEL ETF NIFTY 100 QUAL30	NSE
KOTAKNIFTY	KOTAK NIFTY ETF	NSE

Searching ETFs on Kite

29.5 – How does an ETF work?

When you buy a mutual fund, the AMC takes money from you and buys the securities and discloses the NAV at the end of the day. Similarly, when you redeem your mutual funds, the AMC sells the securities and returns your money. This is quite straightforward. However, when you buy an ETF, you don't really interact with the AMC most of the time because most buying and selling happens on the stock exchanges. It's just an exchange of units between buyers and sellers.

29.6 – Creation and redemption mechanism

I said when you buy an ETF, you “mostly” don't interact with the AMC and I'll explain what that means. If you remember chapter 6, we discussed all the entities involved in an MF transaction — the AMC, custodian and the RTA. But what makes an ETF unique is something called the creation and redemption mechanism. But before we talk about it, you need to know a couple of things.

1. NAV, iNAV, the market price
2. Market makers and authorized participants
3. Creation units
4. Premiums & discounts
5. Tracking error

Market price

When you buy a mutual fund, you look at the NAV. Similarly, when you are buying an ETF, you look at the ETF market price on Kite.

NETFMID150	0.25 % ^	87.28
NETFIT	0.88 % ^	26.30
HNGSNGBEES	-0.87 % v	352.76
INFRABEES	0.86 % ^	426.92
JUNIORBEES	0.90 % ^	360.39
ICICIOVOL	0.60 % ^	120.02
M50	-0.21 % v	147.78
ICICI500	0.84 % ^	205.09

ETF prices

These prices are determined by the demand, supply and the trading activity on the exchanges. But how do you know if the price you see on Kite is the fair price you are paying for an ETF? Here's where the Net Asset Value (NAV) comes in.

Net asset value (NAV)

Like a mutual fund, an ETF also has an end of the day Net Asset Value (NAV). Just to refresh your memory, NAV tells you the total value of all the fund's assets and yours. The formula for calculating NAV is $NAV = (\text{Value of all the assets} - \text{the expenses}) / \text{number of shares (units)}$. But remember, an ETF trades real-time, whereas NAVs are only announced at the end of the day. So how do you figure out if the price you are paying for an ETF is fair in real-time? Enter iNAV

Intraday or indicative net asset value (iNAV)

Given that ETFs trade real-time, you need a reference point to see if the market price you see on your trading platform is a fair one and the indicative or intraday NAV (iNAV) serves as that reference. AMCs usually calculate this every 10-15 seconds and publish it on their websites. $iNAV = \text{last traded price of all the securities in the ETF basket} \times \text{number of shares in the ETF creation basket} + \text{cash component (i.e. cash which is not deployed in the ETF)} / \text{total ETF shares in the creation basket}$. Put simply; this serves as a real-time NAV so that you can use this as a fair value reference to compare it with the current market price on the stock exchanges.

Creation unit

Like buying ETF units on the stock exchange, you can also buy units directly from the AMC. I'll explain why you'd want to do that later. But, unlike the exchanges, you cannot buy 1 or 2 units directly from the AMC. You can only create and redeem units in what's called the creation size that the AMC defines. A creation unit is nothing but a representative basket of all the securities in the same proportion as the underlying index. For example, the

creation unit size of the ICICI Nifty 50 ETF is 50,000 units, and as of this writing, it's about Rs 80 lakhs. Meaning, you need 80 lakhs to buy all the stocks in Nifty 50 in the same weight.

Market makers and authorized participants (APs)

Unlike mutual funds, there's another entity called market makers or authorized participants in the ETF ecosystem. The role of these guys is to provide liquidity on the stock exchanges. You don't have to worry about liquidity in a mutual fund because there's no real-time trading. But since an ETF trades real-time on the exchange, market makers are appointed by the AMC to provide liquidity continuously. They do this by providing continuous two-way quotes on the exchange, meaning they buy at the **bid** and sell at the **offer**, and the difference is the profit they make. Even though these are small amounts, since they keep doing this, it tends to add up.

Market makers typically tend to be large brokers in India.

Premiums and discounts

Since an ETF trades real-time on the exchanges, their price is influenced by demand and supply—the prices of liquid ETFs trade in line with the NAV of the ETF most of the time. But sometimes, particularly during volatile market phases, the price of an ETF can trade away from the NAV of the ETF. If the price of an ETF is above its NAV, it's called a premium and if the price is below its NAV, it's called a discount.

Tracking error

Tracking error is the annualized standard deviation of the difference between the ETF NAV returns and the index that it tracks. In simple terms, it shows you how closely an ETF tracks its underlying benchmark. A simple example would be if Nifty 50 returned 10% and Nifty ETF gave 9.8%, the tracking error would be 0.2%. An ETF or an index fund will have lower returns than the index because they have an expense ratio and an index doesn't.

A lower tracking error indicates that an ETF or an index fund is tracking the index better. But this is not really an intuitive measure to understand and we'll discuss that later.

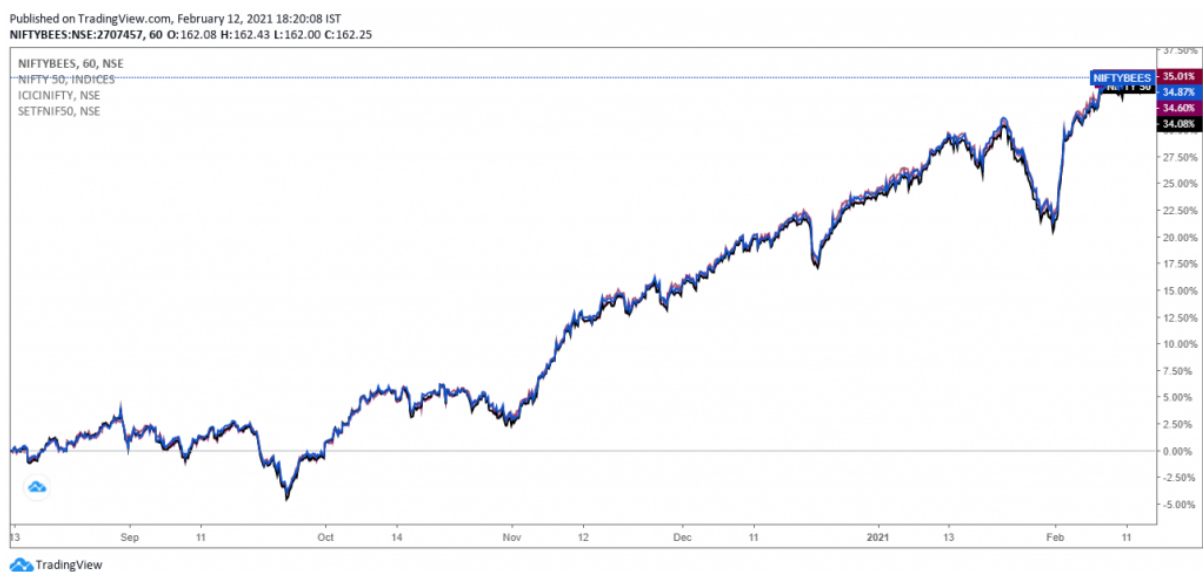
With these concepts in mind, let's get back to the concept of creation and redemption mechanism

There are a few reasons why the creation and redemption mechanism is important. For one, you need not always buy an ETF on the stock exchange. If you are buying in multiples of the creation unit size, buying it directly from the AMC is way better because you might face liquidity issues and impact costs when you buy large quantities on the exchange.

So, in the example I mentioned above, the ICICI Nifty 50 ETF's creation size is roughly 80 lakhs. If you are investing in multiples of 80 lakhs, you can directly contact ICICI, and they will create units, in this case, 50,000 units and credit them to your demat. The AMC will create units at the iNAV. Similarly, you can redeem them by transferring the ETF units to ICICI, and they will credit the cash to your bank account or you can also get the underlying shares instead of cash.

The second reason why creation and redemption mechanisms are important is for ETF arbitrage. Like I mentioned earlier, ETFs can trade at premiums and discounts to the NAV. Market makers are essential in the ETF ecosystem because they are responsible for correcting these premiums and discounts. They do this through the creation and redemption mechanism.

Typically ETFs trade close to their NAVs. Here's a comparison of Nifty BeEs, SBI Nifty ETF, ICICI ETF and Nifty 50.



Nifty ETFs vs Nifty 50

But during a volatile market phase, for example, like the COVID crash in 2020, there can be wide premiums and discounts. Here's how even a popular ETF like NiftyBeEs and SBI Nifty 50 ETF, India's largest mutual fund performed during the volatile market phase of March-April 2020.



Niftybees vs Nifty 50

Now, here's where the market makers come in. If there's a premium, the authorized participant (AP) will buy all the underlying securities that make up the ETF creation unit. In this case, the AP will buy all the 50 Nifty stocks of the same weight; this is also called the creation basket and give them to the AMC. In turn, the AMC will create ETF shares and give them to the AP, who will then sell them on the exchange.

Similarly, if there's a discount, the AP will buy the ETF units on the exchange and give them to the AMC. In return, the AMC will give the underlying shares of the ETF to the AP, who will, in turn, sell them in the market. The difference between the premium, discount, and the NAV will be the AP/market maker's profit.

Perhaps, the best example of this would be the Motilal Oswal NASDAQ 100 (N100). During 2017-2018, the ETF was trading at a huge premium to the NAV. The premiums were as high as 20%+. This was probably because the market makers weren't active in providing liquidity. Value Research allows you to

compare the NAV and price, here's a chart, notice the huge difference between the NAV and the price.

Someone could have taken advantage of this premium by going to Motilal AMC and asking them to create units, which happens at the NAV and sell them at the market price on the exchange. The difference would've been the profit.



N100 ETF price vs NAV

This premium persisted for a long time. Then Motilal, if I'm not wrong, appointed new market makers and launched a fund of funds (FOF) for the ETF, which corrected the premium. So the market maker around 2018 would have created Motilal units at the NAV and sold them on the exchange at the market price and corrected the premium.



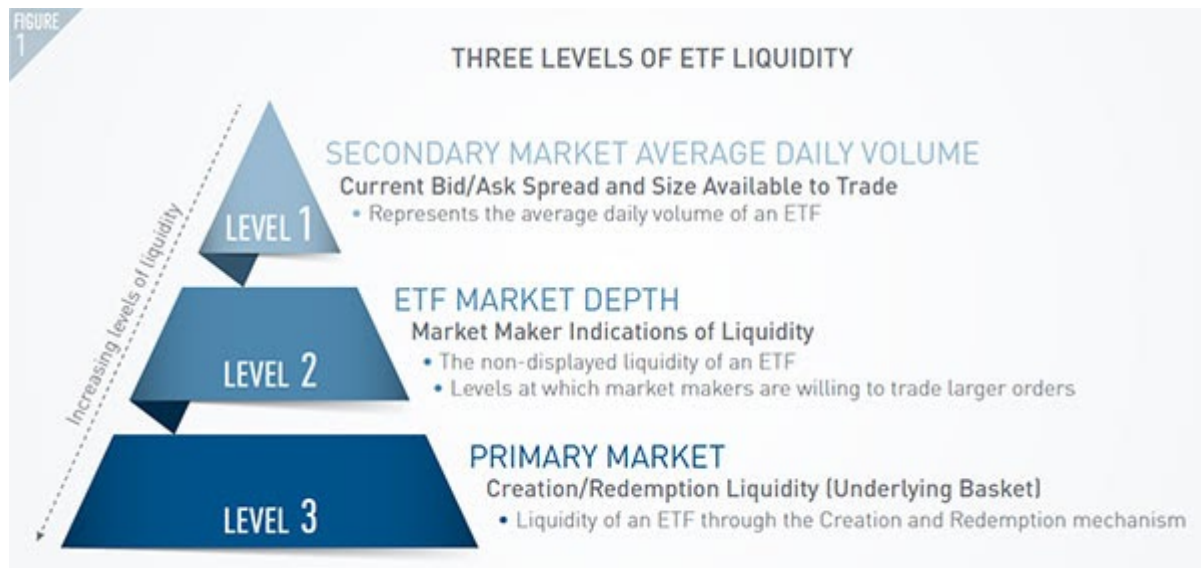
N100 ETF price vs NAV

This is how the creation and redemption mechanism in an ETF is used to ensure liquidity and arbitrage premiums and discounts.

29.7 – ETF liquidity

This is the most important thing when buying or selling an ETF because they trade real-time. When choosing an ETF, most people tend to look at the AUM of an ETF and the trading volumes to decide if an ETF is liquid. Although these 2 things should be considered, the size of an ETF or the daily trading volumes alone don't indicate liquidity.

Let's unpack what ETF liquidity really means. It's essential to remember at this point that even though ETFs trade like stocks, they are not the same.



Layers of ETF liquidity -American Century

Secondary market liquidity: This is what you see on your trading platform. The spread between the bids and offers give you an idea of the available liquidity, but that's not all. Take a look at this image, comparing Mirae Nifty 50 ETF and LIC Nifty 50 ETF. The LIC ETF has an AUM of Rs 618 crs, and the Mirae ETF has about 483 crs. As of writing this post, both the ETFs had just traded 500+ units.

MAN50ETF						LICNETFN50					
0.63 % ^ 157.08						-0.50 % v 157.71					
BID	ORDERS	QTY.	OFFER	ORDERS	QTY.	BID	ORDERS	QTY.	OFFER	ORDERS	QTY.
156.94	1	59698	157.44	1	59851	157.71	1	1	158.87	1	1
156.85	1	22500	157.50	1	140	157.70	1	1	158.89	1	1
156.50	1	10	157.80	1	15000	157.69	1	1	158.90	1	7
156.10	1	1	158.00	2	2	157.50	1	18	158.95	1	1
156.00	2	51	158.50	1	1	157.24	1	5	159.25	1	5
Total		1,78,107	Total		1,50,397	Total		57,565	Total		22,255
View 20 depth						View 20 depth					
Open		151.42	High		158.00	Open		161.70	High		161.70
Low		151.13	Prev. Close		156.10	Low		156.60	Prev. Close		158.51
Volume		563	Avg. price		156.82	Volume		589	Avg. price		157.76
LTQ		100	LTT	2021-02-16 10:46:57		LTQ		1	LTT	2021-02-16 10:57:33	
Lower circuit		123.81	Upper circuit		185.71	Lower circuit		128.09	Upper circuit		192.13

Spreads

Typically, you'd ignore both ETFs assuming that they are too small and don't trade much. But that would be an incorrect assumption because on-screen liquidity isn't everything.

ETF market depth: If you look at the Mirae ETF, nearly 60,000 shares are available for purchase. That means, even if you place a market order, which is a really terrible mistake when buying an ETF, you will get a good fill at Rs 157.44. This is probably a market maker posting a bid and an offer. The LIC ETF, on the other hand, has no liquidity at all. If you'd have placed a market order for 100 units by chance, your average price would have been way higher than the last traded price, given that there are no volumes and your order would've been continuously executed at higher and higher prices.

So, AUM and trading volumes don't tell you everything. Market makers typically hold units that don't show up in the market depth. If you place a limit order to buy, your order will be executed as the market makers place an

order to sell. But yeah, not all ETFs have active market makers, this has to be part of your ETF due diligence which we'll talk about in a bit.

Here's how the Mirae ETF and LIC ETF have tracked Nifty 50. While Mirae has closely tracked Nifty 50, LIC has been all over the place trading at premiums and discounts.



Mirae vs LIC Nifty 50 ETF

Primary market: The third layer of ETF liquidity is the primary liquidity.

Remember, a stock has a fixed number of shares on offer, But even though an ETF trades like a stock, it's not a stock. Market makers and investors can create new ETF units. Large institutions, HNIs, typically don't buy ETFs on the exchange. They directly reach out to the AMC and create units that don't show up on your trading platforms' market depth.

Liquidity of the underlying stocks: The last and the most important layer of ETF liquidity is how liquid the underlying stocks that make up an ETF are.

Remember, an ETF is just a wrapper that holds all the stocks that make up the ETF or an index. So, an ETF can only be as liquid as the underlying stocks.

This might be a little confusing, so let's take an example. Today, in India, we don't yet have a small-cap ETF, have you ever wondered why? In the Indian markets, the liquidity quickly starts disappearing after the 200 largest stocks. As we go down the market cap, the smaller stocks tend to have less outstanding shares, less trading volumes, and usually keep hitting upper and lower circuits.

So, assuming there was a small-cap ETF and that there was a sudden spike in demand, the market maker would have had to create units to satisfy the demand. Now if some of the underlying stocks are not liquid or have hit circuits, which is quite common in small-caps, he wouldn't have been able to create units. In such a case, the ETF will probably trade at a premium to the NAV because there will be more demand for the existing units. Not just, small-caps, even mid-cap stocks in India have liquidity issues. So, an ETF can only be as liquid as it's underlying stocks. But this isn't a problem in a large-cap ETF like a Nifty 50 ETF because these are the biggest and the most liquid stocks.

To summarize, trading volumes and AUM are factors, but they don't tell you everything about an ETF.

29.8 – ETF choices in India

Like I mentioned at the start of the chapter, ETFs are pretty new in India, we have about 88 ETFs today. A majority of them are equity ETFs. Here are your ETF choices:

1. Equity ETFs

There broadly 2 sub-categories of equity ETFs. You have your plain

vanilla market-cap-weighted ETFs that track indices like the Nifty 50, Nifty 100, Sensex etc. And then you have smart beta ETFs which target factors such as value, quality, low-volatility, momentum etc.

2. **Debt ETFs**

We have debt G-sec ETFs, Bharat bond ETF which just holds bonds issued by PSUs, and then you have an ETF like the CPSE+SDL ETF by Nippon which holds PSU bonds and State development loans (SDLs).

3. **Commodity ETFs**

For now, we just have gold ETFs.

Here's a list of all Indian ETFs.

Are all ETFs passive?

This is a common question that keeps coming up. Today, the biggest ETFs we have are passive ETFs that track either the Nifty 50 or Sensex 30. But smart beta ETFs aren't passive, even though the ETFs track an index. They are more of a hybrid of active & passive like we discussed in the smart beta chapter. Globally, 80-90% of all ETFs are passive, but we see the first traditional active ETFs in the US. Maybe, we'll eventually see them in India as well. So ETFs need not be all passive, it's just that they are passive today.

ETF due diligence

I know this has been a little long, but the idea was to give you the full context you need before investing in an ETF and help you avoid rude surprises. And I hope at this point; you have a clear understanding of how an ETF works and

its mechanics. With that in mind, let's now look at some things you should consider before you buy an ETF.

Always use limit orders

I cannot stress this enough but never use market orders when buying an ETF, always use limit orders. This is one mistake I see investors constantly make. We saw this earlier but let me reiterate this with an example. Take a look at the market depth of Aditya Birla Sun Life Nifty Next 50 ETF. If you placed a market order for 200 units, your order would be executed at prices starting from Rs 350, which is above the LTP, to begin with, and finally, at Rs 374, that's 8.7% higher than the LTP. So, always use limit orders.

ABSLNN50ET			-1.16 %		345.00
BID	ORDERS	QTY.	OFFER	ORDERS	QTY.
345.50	1	6	350.00	1	20
340.12	1	4	350.89	2	2
340.00	1	2	354.00	1	1
338.24	1	1	354.45	2	8
336.20	1	4	354.54	1	1
336.00	1	5	354.79	1	2
335.20	1	2	358.00	1	1
335.00	1	2	360.00	2	2
334.95	1	1	362.00	1	1
333.90	1	5	365.00	1	1
333.00	2	2	366.00	1	1
332.00	1	9	367.00	1	1
331.95	1	250	370.00	4	23
330.50	1	50	373.90	1	49
330.03	1	20	374.00	2	251

Market depth of Aditya Birla Nifty Next 50 ETF

Always check the iNAV

Always look at the iNAV on the AMC website and place a limit order at that level. Don't just place a limit order without looking at the iNAV. The other issue is that sometimes AMC websites don't update their iNAVs or their websites might be down. If there is a big difference between the last updated iNAV and the current market price, that's a sign that there is something wrong. So, make sure to compare the ETF with the intraday chart of the underlying index of the ETF on Kite, and that will give you an indication if the price is correct. Check with the AMC in such a case before placing an order.

Compare the NAV and the price of an ETF and see how it has performed

You should always buy an ETF that tracks the underlying index as closely as possible. Here's how Nippon NiftyBeEs ETF has tracked its NAV, it's pretty close. You can compare the price and the NAV on Value Research; we'll try having this feature on Coin.



Niftybees NAV vs price

Picking up on the earlier point about the tracking error, AMCs disclose the tracking error on their factsheets. But if you see a tracking error as 0.02%, it's hard to understand what it means. Moreover, AMCs calculate the tracking error on the NAV, but you buy and sell based on the price, which can be totally different. So the best way to analyse an ETF is to look at the difference between ETF prices and the underlying index. You want the price of ETF to track the index consistently without huge differences.

Note: Always compare the ETF price with the total returns index (TRI) and not the price returns the index (PRI). The TRI includes dividends. All the index data you see on Kite is PRI. Since ETFs track TRI indices, they reinvest the dividends which reflects in the NAV of the ETF.

Look at the average volumes

Look at the average volumes over a period of time and see how an ETF has traded. You should invest in an ETF that trades regularly. You should avoid ETFs that just have a brief spike in volumes and then don't trade. The Edelweiss ETF – Nifty 100 Quality 30 is an example. The monthly average volumes are about 150 units. You can check the average volumes by applying a moving average on the volume chart on Kite. So assuming you had bought this ETF and had to exit, you most likely wouldn't have been able to.

Published on TradingView.com, February 16, 2021 13:24:12 IST
EQ30:NSE:4396545, 1D O:437.99 H:438.00 L:411.00 C:422.05



Edelweiss ETF – Nifty 100 Quality 30

Avoid buying and selling at market open

Most ETFs don't trade much for 30 mins to 1 hour of the market open. They also tend to trade at abnormal prices because of the low volumes, even orders for a few units can move prices. If you can, avoid trading in the open. And if you have to, check and verify the iNAV and use limit orders.

Is the AMC focussed on ETFs?

Today, most of the AMCs offer ETFs but that doesn't mean they are serious about them. Most of the ETF volumes are in ETFs offered by Nippon, ICICI, and SBI largely. Other AMCs like Mirae, Edelweiss with their debt ETFs do seem serious about building out their ETF offerings. So, along with the other things on the due diligence list, you'll also have to look at whether an AMC is serious about the ETFs it offers. For example, if you look at some of the ETFs by Aditya Birla Mutual Fund, IDBI, LIC, Indiabulls etc., they have horrible tracking errors and almost no volumes.

Creating units with the AMC for higher-value investments

If your investments in ETFs are equal to or more than the creation basket value, it's better if you approach the AMC to create units rather than buying on the stock exchange.

29.9 – ETF vs index funds

This is another question that keeps coming up. Hopefully, this table should help answer these questions. In short, if you want to have active control or if you are actively using passive ETFs, then ETFs are a better choice. But if you are lazy like me and want to make as few choices as possible, then index funds are a better choice.

With ETFs, you can express tactical strategies better than index funds because you can't buy and sell index funds immediately.

Index funds	Exchange-traded funds
End of the day NAV	Real-time pricing. Can be bought and sold anytime

<p>No issue of spreads because execution happens at the end of the day</p>	<p>You might see wide spreads in certain ETFs and during market volatility.</p>
<p>Liquidity isn't an issue and can be managed.</p>	<p>Certain ETFs don't trade much, and underlying liquidity of stocks can impact APs and market-making</p>
<p>Can create SIPs</p>	<p>Possible with Zerodha, may not be possible with other brokers</p>
<p>Expense ratio is all-inclusive—no additional charges</p>	<p>You have to pay a brokerage (free at Zerodha) & other charges & taxes separately</p>
<p>Not possible to have tactical strategies. Less flexible compared to ETFs</p>	<p>With ETFs since you can buy & sell anytime, you can express tactical views. ETFs are much more flexible</p>

<p>Index funds tend to hold more cash and hence have a slightly higher tracking error</p>	<p>ETFs don't hold much cash and hence have a lower tracking error</p>
<p>Lesser choice at-least as of now. But AMC's are launching a fund of funds for ETFs</p>	<p>Pretty much all of the smart-beta products are ETFs. You have a wider choice</p>

29.10 – Performance of ETFs vs actively managed funds

We discussed this earlier in the index funds chapter as well. In the last decade or so, index funds and ETFs have become increasingly popular around the world. One reason is that investors have increasingly realized that a vast majority of actively managed mutual funds don't beat their benchmarks. In a developed market like the US, ~90% of active funds don't beat their benchmarks.

The Indian markets have grown a fair bit and have become increasingly professionalized; institutional investors are a big part of today's market. This means that most of the informational edges and asymmetries have been arbitrated away. Today, pretty much everyone has access to the same information. The odds of someone finding some piece of information that can move a stock, at least in the large-cap space, for example, is pretty much zero.

But perhaps the biggest reason why active funds underperform is that they charge too much.

Actively managed large-cap funds on an average charge ~1.5% whereas a Nifty 50 index fund is available for 0.10%. And we see this in the performance. S&P publishes a report called SPIVA, which measures the performance of active funds. For any period, over 70% of all large-cap funds fail to beat their benchmarks.

FUND CATEGORY	COMPARISON INDEX	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)
Indian Equity Large-Cap	S&P BSE 100	48.39	83.08	80.43	67.67
Indian ELSS	S&P BSE 200	59.52	88.37	76.92	52.78
Indian Equity Mid-/Small-Cap	S&P BSE 400 MidSmallCap Index	39.58	40.00	53.33	43.53
Indian Government Bond	S&P BSE India Government Bond Index	44.00	80.49	79.25	85.71
Indian Composite Bond	S&P BSE India Bond Index	82.31	93.57	97.22	100.00

Source: S&P Dow Jones Indices LLC, Morningstar, and Association of Mutual Funds in India. Data as of June 30, 2020. Returns are shown in INR. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

SPIVA India

Traditionally, the view was that the mid-cap and small-cap space was inefficient, and this was where stock pickers thrived. While this was true, it seems like this is increasingly becoming less so. In the last 5 years since the SEBI categorization exercise, active mid-cap funds have had a tough time keeping up with a broad mid-cap benchmark like the Nifty 50 or BSE/NSE Mid-cap 150 index and even Nifty Next 50 etc. Here's a quick look, this is just for illustration, and ideally, you should look at the rolling returns.

	3 Yr Ret (%)	5 Yr Ret (%)	10 Yr Ret (%)

Fund Name			
Kotak Emerging Equity Fund Regular Plan	12.09	19.16	17.89
DSP Midcap Fund – Regular Plan	10.97	18.49	16.63
Invesco India Mid Cap Fund	13.24	18.07	17.95
Edelweiss Mid Cap Fund – Regular Plan	9.85	17.92	18.28
Nippon India Growth Fund	10.68	17.65	13.27
BSE Midcap 150 Index	9.07	17.6	12.94

Taurus Discovery (Midcap) Fund – Regular Plan	9.44	17.59	15.3
Tata Midcap Growth Fund – Regular Plan	11.2	16.91	16.93
HDFC Mid-Cap Opportunities Fund	8.03	16.44	17.41
L&T Midcap Fund	5.39	16.33	16.15
Franklin India Prima Fund	8.86	15.79	17.27
ICICI Prudential Midcap Fund	6.98	15.28	15.07
UTI Mid Cap Fund – Regular Plan	8.68	15.27	17.2

BNP Paribas Midcap Fund	8.44	14.94	17.59
Baroda Midcap Fund	8.52	14.51	3.73
Motilal Oswal Midcap 100 Exchange Traded Fund	5.8	14.36	12.11
SBI Magnum Midcap Fund	9.36	13.97	17.37
Sundaram Mid Cap Fund – Regular Plan	3.56	13.25	14.98
Quant Mid Cap Fund	12.15	13.01	11.29
Aditya Birla Sun Life Mid Cap Fund	2.77	12.28	12.94

The bottom line is that most actively managed funds don't outperform a simple broad-market ETFs or index funds like Nifty 50, Nifty Next 50 and Nifty Midcap 150. This is due to a combination of high costs, increasing market efficiency, and internal fund mandates to not deviate too much from the indices. Moreover, it's tough to pick those funds & managers that beat their benchmarks. And even if you figure out how to pick a winning manager, there is very little persistence in performance. The best performing fund often ends up being the worst-performing fund over a period of time.

Today, it's a no-brainer to look at index funds in the large-cap space. There's increasing evidence that it's the same in the mid-cap space as well. As for small-caps, these are severely risky and buy and hold may not be an optimal strategy, and active management both in a fund and in timing is needed.

Key takeaways from this chapter

- ETFs trade real-time on the stock exchanges and you can now set-up SIPs in ETFs to invest every month
- Blindly choosing an ETF is a bad idea. ETF due diligence before investing is extremely important
- ETF liquidity is an issue in India because our markets are still small and this needs to be kept in mind when buying and selling
- Always use limit orders and compare the market price of the ETF with the intraday or indicative NAV (iNAV) before buying and selling

- You can check the iNAV on the respective AMC's website
- Sometimes the iNAVs on AMC sites may be wrong. If the difference between iNAV and the price is huge, it's a red flag.
- Compare the ETF price with the underlying index or check with the AMC in cases where the ETF prices are way off from the iNAVs/NAVs
- Large-cap and mid-cap Index ETFs make a lot of sense vs actively managed large-cap and mid-cap index funds

CHAPTER 30

Basics of Macro Economics

30.1 – Why macroeconomics?

The module on Personal Finance has come a long way with over 30 chapters. I can easily think of another 10 or 15 chapters to add, but I won't do that 😊

I think we have covered the major chunk of personal finance, i.e. investments (via mutual funds), and in the process, discussed a ton of other information. I hope you've found this module useful.

I want to end this module with a chapter on MacroEconomics.

Macroeconomics in a personal finance module? Well, I'm sure you may wonder why I'd want to discuss macroeconomics in a personal finance module. After all, personal finance is related to an individual or a family's finances. On the other hand, macroeconomics is a much wider topic related to a country's economic well-fare.

What is the connection here?

You like it or not; your financial fortune is highly dependent on how the country as a whole does; this is especially true when you save for long and hyper long-term investment goals like retirement.

Imagine this; you set retirement as your financial goal. As a part of this, you do your bit diligently, i.e. select your mutual funds carefully, save regularly,

increment your savings by the year, and stick to the course and not succumb to the temptation of pulling out the funds during the tenure.

However, the country you reside in happens to default on its borrowings and suffers from never-ending geopolitical and civil unrest.

Given the situation, do you think your savings will do well?

Or think about a situation in your country at the cusp of a big bang economic reform, with an extremely supportive demographic profile and a super-competent Government. But you fail to see through these shining opportunities and instead decide to play safe and invest your hard-earned money in gold.

Do you think you'd have taken the right investment decision here?

Hence, for this reason, I think it is very important for an individual to understand the basic macroeconomic profile of the country and map it to the past macroeconomic profile and extrapolate a bit to the future and see how the situation pans out.

In this chapter, I'll stick to basics and help you understand the absolute essential macroeconomic principles. If the topic interests you'd, I'd suggest you pick up any good undergraduate book on macroeconomics and read through it. I'm sure you won't regret it 😊

30.2 – Gross Domestic Product (GDP)

I understand this is an absolute basic metric to start our discussion, but we will start with it for the same reason. Many of you may be familiar with it; if yes, please feel free to skip this section. For those who are not familiar with ‘GDP’, let me tell you a quick story.

After my sister’s marriage in 2002, she moved to Coimbatore, Tamil Nadu. I was in my early 20’s, and I’d often make weekend trips to Coimbatore to visit her and spend a few days with her. My sister had a very interesting neighbour in Coimbatore, and she would often tell me stories about them. On one of my visits, I got to meet the neighbours as well.

The neighbour’s house had three family members – husband and wife, both in their mid 50’s and a teenage daughter. Husband managed a steel kitchenware shop, which sold household items like rice cooker, pots, and pans. His wife managed a small homemade papad and pickle business, and the teenage daughter taught classical dance to the neighbourhood kids.

All three members of the house had an economic output. Given my unnecessary curiosity, I remember trying to figure out how much money this family made. I don’t remember the exact math, but I remember these numbers; I estimated that –

- The husband sold goods worth 2 to 2.5L lakhs per month.
- The wife sold goods worth 25K every month.
- The daughter charged 500 per month per kid and had ten students, which was 5K per month.

Give or take, this small and admirable family's monthly income was anywhere between 2.3 to 2.8L per month or about 34L per year on a gross basis. This family had no other source of income. In other words, 34L was the total economic output of this family after accounting for all the products and services collectively sold by this family.



In a sense, I think it is ok to conclude that the family's 'Gross Domestic Product' (GDP) was 34L per year. If you realized, GDP here represents the total value of the economic output of the family, which includes goods sold (kitchenware), products manufactured and sold (papad and pickle), and services offered (dance classes).

Now step aside and think about the country as a whole. The country has many factories, companies, services units of various kinds; all of these collectively have an economic output. The combined economic value of all these entities (operating within the geographic boundaries of the country)

represents the GDP of the country. If the companies do well and thrive, then naturally, the GDP of the country increases.

Or in other words, a growing GDP is a healthy economic sign. We all want the GDP of the country to increase.

Have a look at the Indian GDP ranking –

Lists

Per the International Monetary Fund (2020 estimates) ^[1]			Per the World Bank (2019) ^[20]			Per the United Nations (2019) ^[21]		
Rank	Country/Territory	GDP (US\$million)	Rank	Country/Territory	GDP (US\$million)	Rank	Country/Territory	GDP (US\$million)
	<i>World</i> ^[19]	83,844,988		<i>World</i>	87,751,541		<i>World</i> ^[22]	87,445,260
1	United States	20,807,269	1	United States	21,427,700	1	United States	21,433,226
2	China ^{[n 2][n 3]}	14,860,775	2	China ^[n 9]	14,342,903	2	China ^[n 9]	14,342,933
3	Japan	4,910,580	3	Japan	5,081,770	3	Japan	5,082,465
4	Germany	3,780,553	4	Germany	3,845,630	4	Germany	3,861,123
5	United Kingdom	2,638,296	5	India	2,875,142	5	India	2,891,582
6	India	2,592,583	6	United Kingdom	2,827,113	6	United Kingdom	2,826,441
7	France	2,551,451	7	France	2,715,518	7	France	2,715,518
8	Italy	1,848,222	8	Italy	2,001,244	8	Italy	2,003,576
9	Canada	1,600,264	9	Brazil	1,839,758	9	Brazil	1,847,795
10	South Korea	1,586,786	10	Canada	1,736,426	10	Canada	1,741,496

I've got this from Wikipedia, where they have tabulated the 2020 GDP rank of countries as per various estimates (IMF, World Bank, and UN).

India ranks around 6th or 5th, and the GDP itself is pegged to 2.6 to 2.9 Trillion USD. Do recollect, the collective economic output of India is estimated between 2.6 – 2.9 Trillion USD. We are just below China, Japan, UK, and Germany.

While it is great to know we are in the top 5 GDPs of the world, it is also important to understand how our GDP grows. After all, we want to be better than being in the top 5, and we want to get there as quickly as possible.

To measure the speed at which a country's GDP is growing, we need a growth rate. The number is usually expressed in percentage terms. Hence, if the percentage is 5%, it implies that a country's GDP grows at 5%.

The technique of estimating the GDP growth rate is beyond this discussion's scope; we won't get into that today but will use the widely accepted number.

Now, when it comes to measuring the GDP growth, there are two terms you should familiarize yourself with –

- The nominal GDP growth rate
- The real GDP growth rate

Both these growth rates measure the speed at which the GDP grows; if you guessed right, these rates are the CAGR of the GDP. Do recollect; we have discussed CAGR several times in this module.

To put this in context, take a look at this new paper headlines –

FY21 nominal GDP growth seen at 10%; capex push to spur economic expansion: Sitharaman

Last Updated: Feb 01, 2020, 07:56 PM IST

   
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The reference point here is the 'nominal growth' rate.

The nominal growth rate is the absolute growth rate. While it is ok to use the nominal growth rate, it may not be an accurate representation of ground realities.

Let me explain.

Think of it as investing Rs.100 in stock. At a 10% growth rate and five years, Rs.100 grows to Rs.161/-. But is the value of Rs.161/- in 5 years the same as Rs.161/- today? Won't it be right? And we know it won't be the same because inflation eats into the purchasing power of money on year on year basis.

Hence to get the most accurate representation, we need to adjust the growth rate to inflation. When we adjust the nominal GDP growth rate to inflation in GDP, we get the real GDP growth rate.

Real GDP growth = Nominal GDP growth – Inflation.

Assuming the inflation at around 4.5% (ranges between 4.5% to 5%), real GDP of India –

10% – 4.5%

= 5.5%

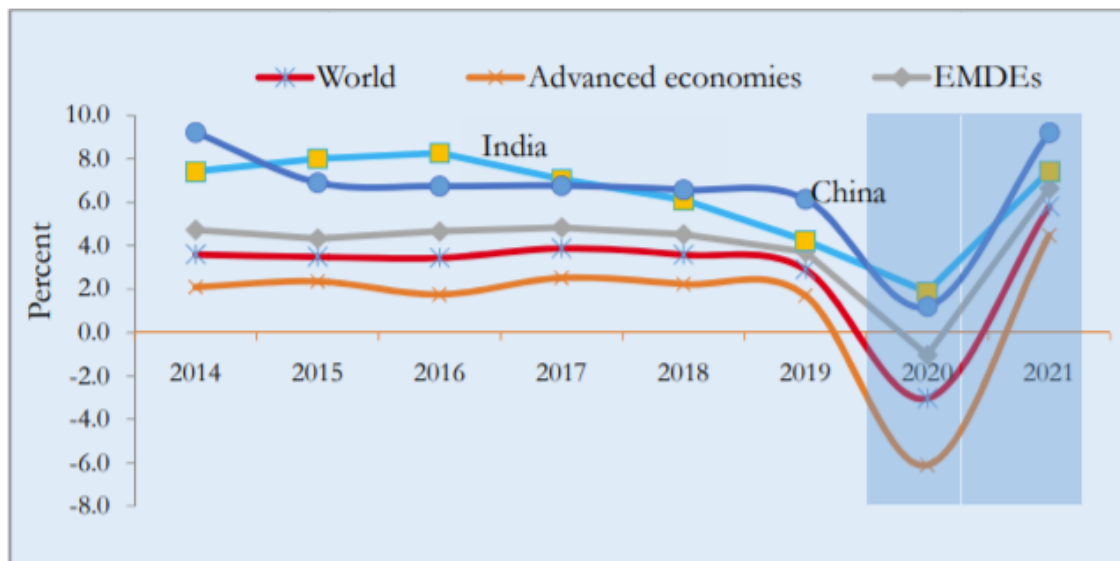
Do take a look at this snapshot; it estimates the real GDP growth at 5% –

- *The growth of India's real GDP in 2019-20 is estimated at 5.0 per cent (Second Advance Estimates) as compared to 6.1 per cent (First Revised Estimates) in 2018-19. However, with the onset of COVID-19 pandemic, its intensity, spread and duration will now majorly determine whether India is able to realize its estimated and projected GDP growth.*

The snapshot is from the Department of Economic Affairs; you can read the entire paper here – <https://dea.gov.in/sites/default/files/March%202020.pdf>.

I also found this interesting chart from the same paper; I thought I'd share it here for your quick reference –

Figure 1: Growth of real GDP: world and major economies



Data Source: World Economic Outlook, April 2020.

Note: EMDE – Emerging Market and Developing Economies

Thanks to COVID, most of the economies (from the GDP perspective) took a hit in 2020. But they are all expected to bounce back up in 2021 and perhaps 2022. Whether this will pan out as per estimates or not is an unknown. But the stock markets at least seem to factor this 😊

Anyway, at this point, I want you to take a break and think about this –

- You understood what GDP is
- You understood the GDP growth rate, both nominal and real.

How is this relevant to personal finance?

30.3 – GDP and Market cap

We have discussed the concept of market cap earlier in Varsity. For those of you not familiar with market cap, here is a quick note –

Assume the stock price of a certain company is Rs.75/- per share. Further, assume that the company has only 1000 shares outstanding of this company.

The market cap of this company is –

Stock price x total outstanding shares

$$= 75 \times 1000$$

$$= \text{Rs.}75,000/-$$

The total outstanding shares of this company are constant, but the stock price fluctuates daily. The higher the stock price, the higher is the market cap and vice versa.

Now assume another company has 2000 shares outstanding, and the stock price is 105 per share. The market cap of this company is –

$$= 105 \times 2000$$

$$=2,10,000/-$$

Now assume (the last assumption, I promise) that the entire market comprises just these two companies. The entire market cap of this market is –

$$75000 + 210000$$

$$=2,85,000/-$$

Hopefully, with this arbitrary example, you got a sense of the concept of ‘market cap of the market’. The market cap of Indian companies (sum of the market cap of all the listed companies in the country) as of Jan 2021 is roughly \$2.5 Trillion.

India's market cap swells to \$2.5 trillion

2 min read . Updated: 04 Jan 2021, 05:54 AM IST

Ashwin Ramarathinam

One of the direct established correlations is that as the country's GDP improves, so will the market cap. If the market cap does well, then equity investments are bound to well. We have seen this happen in the past.

So when you look at the GDP data, think about how the country is placed in terms of GDP, and it is expected to do over the next 5 or 10 years.

For instance, here is a thought about the Indian GDP situation –

- India is a 2.6 Trillion USD GDP as of 2021
- The real GDP growth rate is 5.5%
- The countries above us in the GDP rank, i.e. Japan, Germany, and the UK, have large GDPs, but their real growth rates are lower.

Even if India did nothing spectacular or did nothing stupid to degrow, then under a decent real GDP growth rate (and slow down in developed countries), the GDP rank is bound to increase.

No think about a growing GDP plus the largest democracy globally, and top it up with a large working population; what do you expect?

Well, these are factors that usually are a precursor to attracting more investment capital into the country. With these investments coming in, corporates are expected to do well, and in turn, the country's market cap is expected to do well.

Will this happen overnight? No.

Will this happen over the next 1-2 years? Maybe not.

Will this happen over the next 8-10 years? Well, it seems likely.

Hence, the need to stay invested for a longer-term.

30.4 – India Inc

Think about a corporate entity. A corporate entity or a company usually has few sources of revenue and a set of expenses. The difference between the revenue and expense, if positive, results in a profit to the company. If the difference between the revenue and expense is negative, then that is a loss to the company.

Now think about India as a company. The company's management is the Government, which is democratically elected. The company has a few revenue sources, mainly in terms of taxes, and the company also has expenses mainly in terms of capital and revenue expenses. If the income minus expense is positive, that's a surplus to the country, else a deficit.

Take a look at the snapshot below; I've got this from the website of Controller General of Accounts; here is the link –

<http://www.cga.nic.in/GlanceReport/Published/2018-2019.aspx>

Financial Highlights 2018-19					
(₹ Crores)					
	Description	R.E.* 2018-19	Actuals 2018-19	Actuals 2017-18	YTY Growth
1	Revenue Receipts	17,29,682	15,53,011	14,35,078	8%
2	Tax Revenue (Net to Centre)	14,84,406	13,17,211	12,42,487	6%
3	Non-Tax Revenue	2,45,276	2,35,800	1,92,591	22%
4	Capital Receipts	93,155	1,12,684	1,15,678	-3%
5	Recoveries of Loans	13,155	17,957	15,633	15%
6	Other Receipts	80,000	94,727	1,00,045	-5%
7	Total Receipts (1+4)	18,22,837	16,65,695	15,50,756	7%
8	Revenue Expenditure	21,40,612	20,07,399	18,78,679	7%
9	Of which Interest Payments	5,87,570	5,82,648	5,28,952	10%
10	Of Which, Grants for creation of Capital Assets	2,00,300	1,91,220	1,92,520	-1%
11	Capital Expenditure	3,16,623	3,07,714	2,63,139	17%
12	Total Expenditure (8+11)	24,57,235	23,15,113	21,41,818	8%
13	Revenue Deficit (8-1)	4,10,930	4,54,388	4,43,601	2%
14	Effective Revenue Deficit (13-10)	2,10,630	2,63,168	2,51,081	5%
15	Fiscal Deficit [12-7]	6,34,398	6,49,418	5,91,062	10%
16	Primary Deficit (15-9)	46,828	66,770	62,110	8%

The data you see above is for the Financial Year 2018-19, represented in Rupee Crores. Let us break this down to understand the numbers better.

The first line here details India Inc's Revenue; it is called the 'Revenue Receipts'. These receipts act as the sources of revenue for the Government. There are two broad categories of revenue for the Government, i.e. Taxes and Non-tax revenue.

Taxes Revenue – Tax revenue includes all sorts of taxes that the Government collects. Broadly, taxes can be classified as 'Direct Taxes' and 'Indirect Taxes'.

The direct taxes include taxes paid by individuals, called the 'Personal Income taxes' and the corporates' taxes, called the 'Corporate Income tax'.

Indirect taxes mainly include the tax in the form of 'GST'.

As you can see, India Inc collected close to 14.8L Crore as taxes in 2018-19; this includes both direct and indirect taxes.

Remember, when GST is charged, a portion goes to the state and a portion to the centre. Hence when you look at 14.8LCr, this is the 'net to the centre', which means that the actual tax collection is higher than 14.8L Cr. Of course, you can get the exact value by inspecting this report further, but I'll refrain from doing so. But if I remember right, roughly 2/3rd is retained by the centre, 1/3 is distributed to states.

Non-tax revenue – Apart from the tax revenue, the Government has a 'non-tax revenue' as an income source. The non-tax revenue source mainly includes the dividends paid out by the PSU companies (companies like LIC, NTPCL, ONGC, NALCO etc.), where the Government of India is a majority stakeholder. Apart from dividend income, the Government also has revenue by selling stakes in these companies, often referred to as the disinvestment program. The non-tax revenue for 2018-19 was roughly 2.4L Cr.

Total revenue is the sum of these two revenue lines, which is roughly 18.2L Cr.

The Government has expenses, and these expenses can be categorized into two buckets, i.e. the 'Revenue Expenditure' and 'Capital Expenditure'.

Revenue Expenditure – These expenditures include subsidies across various Government schemes, salaries to Govt employees, interest payments etc. The

revenue expenditure is a big bill that the Govt has to pay, and as we can see from the snapshot, this bill stood at 21.4L.

Capital Expenditure – The capital expenditure, on the other hand, is the Government's expenditure on infrastructure; this includes things like roads, bridges, hospitals, electrical grids, transportation etc. The capital expenditure is 3.1L Crore.

Think about it, capital expenditure is 3.1L Cr, while the revenue expenditure is nearly seven times more at 21L Cr. If the Govt were to spend more on Capital expenditure, it leads to better infrastructure, spurs business growth, creates jobs, and leads to better tax collection.

As a long-term investor, you need to keep track of trends in these spend patterns and get a sense of how the country is evolving.

The sum of revenue and capital expenditure is the total expenditure of the Govt, which is roughly 24.57Cr.

So, on the one hand, Govt collected revenue of 18.2L Cr, and on the other hand, the expenses stood at 24.57Cr. The expenses are much higher than the income. The negative difference, i.e. to the extent of nearly 6.3L Cr, is called the 'Fiscal Deficit'.

From the same report, I've pulled the GDP data –

Year	GDP in ₹ Lakh Crore
2009-2010	61.64
2010-2011	76.74
2011-2012	89.12
2012-2013	101.13
2013-2014	113.55
2014-2015	126.54
2015-2016	135.76
2016-2017	151.84
2017-2018	167.73
2018-2019*	190.10

The country's GDP as per 2018-19 data is 190.1L Crore. If you calculate the Fiscal Deficit as a percentage of GDP –

6.3L Cr / 190.1L Cr

= 3.3%

Any macroeconomic debate or discussion, this is the ratio that gets spoken about the most. The Government puts in massive efforts to contain the Fiscal Deficit to GDP ratio to sub 4%.

To put this in perspective, do check this extract from Wikipedia –

The United States has the [largest external debt in the world](#) and the 14th largest [government debt as % of GDP](#) in the world. The annual budget deficit increased from \$585 billion (3.2% GDP) in 2016 to \$984 billion (4.7% GDP) in 2019, up 68%.^{[2][3]} Relative to a CBO forecast prior to President Trump's inauguration, the budget deficits for 2019-2021 roughly doubled, due to the [Trump tax cuts](#) and other spending legislation.^[4]

The US's fiscal deficit as a percentage of GDP is nearly 4.7%, which is quite staggering.

While at it, we can crunch one more data point, i.e. net tax collected as a percentage of GDP –

$$= 17.3/190.1$$

$$= 9.1\%$$

If we include the share of state's, this ratio is roughly at 11-12%. Tax collection as a percentage of GDP is an important metric; remember, the higher the tax collection, the higher is the revenue, which means the probability of shrinking the fiscal deficit is higher.

So what will lead to higher tax collection? Things like newer job creation, business expansion, improvement in ease of doing business, greater compliance, etc., result in higher tax collection.

Again, to remind you, you need to track these numbers to understand how the country operates. Remember, when you invest in the long term, your fortunes depend on how your investments perform, depending on how India as a country performs.

Without a sense of these basic details, it is equivalent to investing in the dark.

I'll end this discussion here; as you can imagine, the topic is vast, and we have only scratched the surface 😊

With this, we are at the end of this module on the Personal Finance module; I hope you'd enjoyed reading this, as much I enjoyed writing this for you.

Good luck and invest wisely 😊

Key takeaways from this chapter

- The country's GDP represents the country's collective economic output; this includes all the goods and services produced within the country's geographic boundary.
- The nominal GDP growth rate is the GDP's absolute growth rate; it does not adjust for inflation.
- The real GDP growth rate adjusts for inflation.
- With 2.6 to 2.9 Trillion USD, India's GDP stands at 5th/6th position in the global GDP rank.
- As the GDP of the country expands, the market cap also tends to expand.
- India Inc's revenue consists of tax and non-tax revenue.
- India, Inc's expense consists of revenue and capital expenditure.