search

Module 11 — Personal Finance

Chapter 3

# Personal Finance Math (Part 2)

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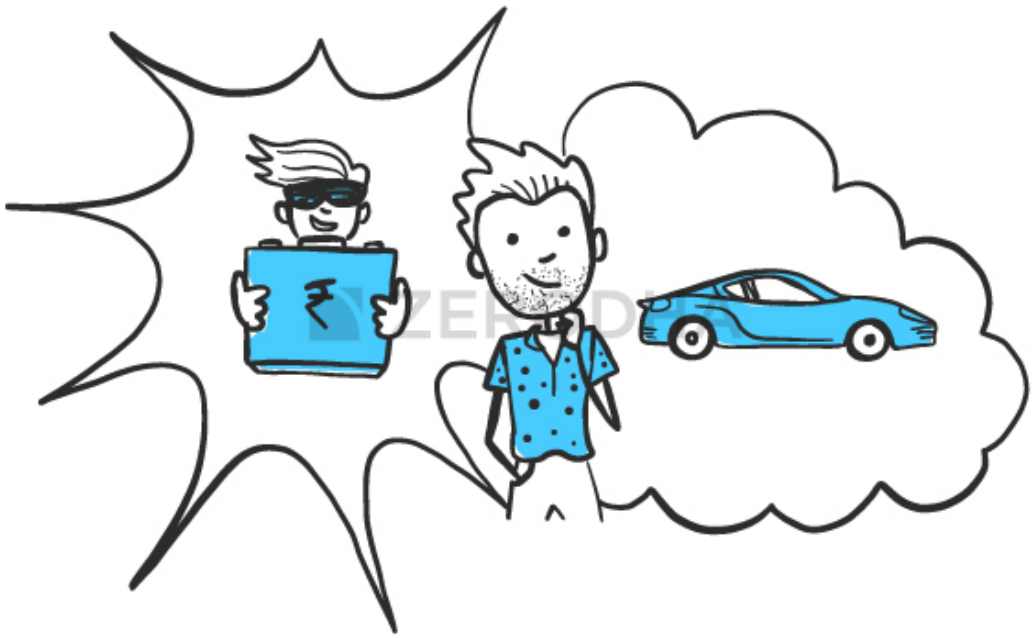
## 3.1 – Money today versus money tomorrow



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 J

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 J

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 thing –

- 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 2$^{nd}$ 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.) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 07.26 GS 2029 | 14/01/2029 | 5.00 | 6.4023 | 106.0000 | 106.0100 | 6.4010 | 5.00 | 106.0100 | 6.4010 | 10.00 | 18125.00 |
| 07.32 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 |
| 07.17 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 |
| 07.27 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 |
| 07.72 GS 2025 | 25/05/2025 | 10.00 | 6.5477 | 105.5700 | 105.7200 | 6.5173 | 20.00 | 105.5200 | 6.5578 | 5.00 | 210.00 |
| 08.13 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 |
| 07.37 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 |
| 06.79 GS 2027 | 15/05/2027 | 5.00 | 6.7371 | 100.3025 | 100.4000 | 6.7208 | 25.00 | 100.4000 | 6.7208 | 5.00 | 105.00 |
| 06.68 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 |
| 06.84 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 |
| 07.59 GS 2026 | 11/01/2026 | 5.00 | 6.6494 | 104.8500 | 104.9950 | 6.6221 | 5.00 | 104.9000 | 6.6400 | 5.00 | 30.00 |
| 06.17 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 |
| 06.17 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 |
| 07.40 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 |
| 08.24 GS 2027 | 15/02/2027 | 10.00 | 6.7624 | 108.6000 | 108.8500 | 6.7217 | 10.00 | 108.9000 | 6.7136 | 10.00 | 10.00 |
| 08.24 GS 2033 | 10/11/2033 | 0.00 | 0.0000 | 0.0000 | 112.9000 | 6.8101 | 10.00 | 112.3000 | 6.8714 | 5.00 | 5.00 |
| 08.33 GS 2032 | 21/09/2032 | 0.00 | 0.0000 | 0.0000 | 113.0000 | 6.8142 | 10.00 | 112.7000 | 6.8464 | 5.00 | 5.00 |
| 07.57 GS 2033 | 17/06/2033 | 5.00 | 6.8086 | 106.7500 | 107.0000 | 6.7817 | 5.00 | 106.7500 | 6.8086 | 5.00 | 5.00 |
| 07.50 GS 2034 | 10/08/2034 | 0.00 | 0.0000 | 0.0000 | 106.5000 | 6.8021 | 15.00 | 0.0000 | 0.0000 | 0.00 | 0.00 |
| 07.59 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 |
| 07.61 GS 2030 | 09/05/2030 | 5.00 | 6.7865 | 106.2000 | 106.3500 | 6.7674 | 5.00 | 0.0000 | 0.0000 | 0.00 | 0.00 |
| 07.62 GS 2039 | 15/09/2039 | 0.00 | 0.0000 | 0.0000 | 108.9000 | 6.8007 | 10.00 | 0.0000 | 0.0000 | 0.00 | 0.00 |
| 07.68 GS 2023 | 15/12/2023 | 10.00 | 6.3714 | 104.9000 | 105.0000 | 6.3456 | 10.00 | 0.0000 | 0.0000 | 0.00 | 0.00 |
| 07.69 GS 2043 | 17/06/2043 | 5.00 | 6.9014 | 109.1500 | 109.7900 | 6.8502 | 5.00 | 0.0000 | 0.0000 | 0.00 | 0.00 |
| 08.19 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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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 forumla is –

**Present value = Future value / (1+ discount rate ) ^ (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 problem 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*(1+R)^(n),** which is also the future value, therefor –

**Future value = P*(1+R)^(n)**

Where,

- P = Amount
- R = opportunity cost
- N = Time period

Applying this,

= 20,590,353 * (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)

= **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*(1+7.5%)^(2)

= **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*(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*(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.



## 50 comments

1. *jaya* says:
August 7, 2019 at 6:24 pm

hai sir interesting topic . next topic sir ?
will you teach about chart patterns and breakouts

Reply

-  *Karthik Rangappa* says:
  August 8, 2019 at 11:21 am

  Will try and put up the next topic soon. Charts and other aspects of TA is already explained here – https://zerodha.com/varsity/module/technical-analysis/

  Reply

2.  *jaya* says:
   August 8, 2019 at 2:15 pm

   sir chart patterns about triangle pattern , flag patterns, rising wedge, bilateral patterns, falling wedge, bullish wedge . where can we find this chart patterns sir . and how can we analysis

   Reply

   -  *Karthik Rangappa* says:
     August 9, 2019 at 11:20 am

     Ah, you mean the dow patterns. I have discussed a few in the TA module. Maybe you should check that.

     Reply

3.  *Vivek r ram* says:
   August 8, 2019 at 3:51 pm

   Dear Karthik sir
   Happy news that new chapters are flowing….thanks a lot….sir if u could consider a few chapters on mutual funds it would be helpful..
   Thanks a lot once again to zerodha & to you for all ur efforts to enlight us from within…..

   With regards
   Vivek

   Reply

   -  *Karthik Rangappa* says:
     August 9, 2019 at 11:32 am

     Thanks, Vivek. MF will form a core part of this module ☺

     Reply

4.  *Prashant* says:
   August 8, 2019 at 11:42 pm

   The problem solved by using the present value of the money
   future value = Rs.4,50,000
   risk free rate of return= 7.5%
   no of years = 15
   present value = 4,50,000/(1.075)^15
   =Rs 1,52,084.70

   Reply

-  *Karthik Rangappa* says:
  August 9, 2019 at 11:47 am

  Thats right! So if instead of Rs.200,000/- the offer was for 1.52L, then it would be a fair deal ☺

  Reply

5.  *Vikrant* says:
   August 10, 2019 at 6:59 pm

   Dear Sir,
   While calculating the time value of future did you consider the inflation rate? or the discount rate is the inflation rate?
   Please make me clear about it. i am little bit confused about it.
   I am well aware about the compounding effect of money by using compound interest rate (CAGR) which should be at least equal to or more than the inflation rate.

   Please clear it to me.

   Thank you.

   Reply

   -  *Karthik Rangappa* says:
     August 11, 2019 at 11:13 am

     Thats right, Vikrant. However, I've not really taken inflation into consideration here, at this point, the idea is to just demonstrate the application of the math. We will get into the inflation part later in the module.

     Reply

6.  *Vikrant* says:
   August 12, 2019 at 10:07 pm

   Thank your Sir. I am looking forward to get the next chapters as early as possible.
   Your first chapter in personal finance was very interesting and it encouraged me through that 3 sisters example.

   Thank for replying,
   Vikrant ☺

   Reply

   -  *Karthik Rangappa* says:
     August 13, 2019 at 11:31 am

     Glad to know that, Vikrant. Will try and publish soon.

     Reply

7.  *Sundeep* says:
   August 14, 2019 at 10:07 am

   Sir what is the best place to buy corporate bonds in India? Are you planning to put up a chapter on the same in near future? Thank you.

   Reply

   -  *Karthik Rangappa* says:
     August 14, 2019 at 11:46 am

You can buy the Government bonds and bills here – https://coin.zerodha.com/gsec, however, if you are specifically interested in corporate bonds, then you should check this – https://www.goldenpi.com/home

Reply

8. *Sundeep* says:
August 14, 2019 at 11:16 am

If possible please point me toward some good reading material on Corporate Bonds sir. Thank you.

Reply

9. *Amit Sahoo* says:
August 16, 2019 at 7:21 am

Is there any way to get the hard copies of all the modules?

Reply

- *Karthik Rangappa* says:
August 16, 2019 at 10:22 am

Unfortunately, we do not have hard copies of this. You can download the PDFs though.

Reply

10. *Ashish Mourya* says:
August 18, 2019 at 1:33 pm

Dear karthik ji,
I am very thankful to you that you took notice of my request of making a module on future cost/value of money. This is a great chapter and it will definitely help me and others for achieve financial goals in their life.
I was busy in last few days in accumulating RIL before AGM results. . So didn't have opportunity to visit varsity.

You have done a wonderful job as always in explaining such complex topic in such a easy way.

I may sound greedy if i ask more but since you are so helpful , i am requesting you to explain theory, forms and learn to draw "Elliott waves ". If there is some good book available on this topic plz recommend ( i have average financial knowledge but can very work hard to understand any financial term needed) .
I am trying to learn it , and it a very complex but very strong tool which can help me and others in this financial jungle.

I have knowledge of Candlestick and use DMA (50, 200), Pivot points, MACD, Stochastic and volume chart for intraday and swing trading. I also thanks to Zerodha work such nice and wonderful trading platform and very low charges.
Again many many thank you and all Zerodha team for making retail traders and investors so knowledgeable.
Sincerely
ashish mourya

Reply

- *Karthik Rangappa* says:
August 18, 2019 at 7:02 pm

Ashish, thanks for the kind words and I'm really glad that you like the content on Varsity.

Unfortunately, I'm not too familiar with EW analysis. I somehow did not learn this and frankly, I don't know if I've missed much. However, let me try and put some research and try and find you lead for good online content on this topic. Thanks.

Reply

11. *Sundeep* says:
August 19, 2019 at 10:48 am

Karthik may I ask why isn't SLB services disabled in Zerodha? Can you tell me when it will be available for traders to use? Thank you.

Reply

- *Karthik Rangappa* says:
August 19, 2019 at 12:05 pm

Sundeep, we don't have SLB yet on Zerodha. It is on the list of things to do.

Reply

12. *Prashant* says:
August 19, 2019 at 10:07 pm

Dear Sir ,
Can you explain what is LIQUID BEES and is it good for the retail investor to park the excess cash in this instrument rather than the bank account?

Reply

- *Karthik Rangappa* says:
August 20, 2019 at 11:59 am

Think of liquidbees as the equivalent (or better) than parking your money in the bank account and earn a savings account return. I'll try and include a chapter on this.

Reply

13. *Prashant* says:
August 20, 2019 at 5:02 pm

Sir I will be waiting for the chapter on this , for the time being can you provide me with the site or the article so that i can understand/learn how it works

Reply

- *Karthik Rangappa* says:
August 21, 2019 at 1:44 pm

Let me check for good online links, Prashant.

Reply

14. *Ashish* says:
August 20, 2019 at 11:20 pm

Dear karthik ji
Thanks for your reply,
I will wait for your recommendation on Elliot wave .

Sincerely

Reply

15. *Sundeep* says:
August 22, 2019 at 1:40 pm

https://twitter.com/jackschwager/status/1164393776216854528

Would love to see you in the new Market Wizards book Karthik. I certainly know you're qualified to be in there.

Reply

-  *Karthik Rangappa* says:
  August 22, 2019 at 3:11 pm

  Lol, no Sundeep I'm not ☺

  Reply

16.  *Vinoth* says:
August 24, 2019 at 9:34 pm

Hi Sir,

For more than two years I am trading with Zerodha. Varsity is something I come back again and again to refresh my learning and to learn new things.

Sir, I have a humble request here. Teach us something about accounting. Or clarify whether a rookie trader should start maintaining his accounts atleast in the form of a cash books. At the end of the day when I try to make trading as my profession, I would like to know how to build a balance sheet, P&L statement, Cost accounts for my trading. I right now manage a cash book. I still wonder how to make entry of span and exposure margin in a cash book. Any Business will not be complete without accounting. Hope you will come up with some module on that

Reply

-  *Karthik Rangappa* says:
  August 25, 2019 at 11:22 am

  Vinoth, this is a great idea. I'm not sure if I'm the right person for this but will try and find someone for this.

  Reply

17.  *Aswin* says:
August 27, 2019 at 12:43 pm

Hi, Thanks for your extensive work.
Can you put a topic on NPS.

Regards
Aswin

Reply

-  *Karthik Rangappa* says:
  August 27, 2019 at 3:08 pm

  Yes, we will, Aswin. Thanks.

  Reply

18.  *Hari* says:
August 27, 2019 at 9:09 pm

can we expect volatility based trading system anytime soon, Karthik?

Reply

-  *Karthik Rangappa* says:
  August 28, 2019 at 11:40 am

  Hari, the current focus is on personal finance. Maybe after that.

  Reply

19.  *Premaleela* says:
August 29, 2019 at 11:10 am

Karthik I had asked you if it would be possible to come up with a list of suggested reading at the end of each chapter and you said you would. Can you tell me if you're still working on it?

Also for the time being, can you let me know which book to read on building a Trading Strategy? Ie. More about the process of building and back testing and all that stuff?

Reply

20.  *Premaleela* says:
August 29, 2019 at 11:13 am

Also I do have another request. I think it would be best if you could tell us what you have not covered in Varsity Karthik. I was applying the FA the way you do it (and with very good results – thank you for that), but I did recently learn there are other ways of investing like Contrarian Investing or Quantitative Investing. Do you think you can, at the end of a module, give us pointers towards whatever you have not covered in that module about that topic? Thank you.

Reply

21.  *Sundeep* says:
August 29, 2019 at 11:34 am

Hello Karthik. I hope you're doing well. I wanted to ask you, which Investor's style do you think is the closest to your investing philosophy and the same with Trading too. Which trader do you think is the closest to your style of trading? Thank you.

Reply

-  *Karthik Rangappa* says:
  August 29, 2019 at 11:46 am

  I personally believe there are no two investors alike ☺

  Reply

22.  *Premaleela* says:
August 29, 2019 at 11:56 am

Also I do have another request. I think it would be best if you could tell us what you have not covered in Varsity Karthik. I was applying the FA the way you do it (and with very good results – thank you for that), but I did recently learn there are other ways of investing like Contrarian Investing or Quantitative Investing. Do you think you can, at the end of a module, give us pointers towards whatever you have not covered in that module about that topic? Thank you.

Reply

-  *Karthik Rangappa* says:
  August 30, 2019 at 11:04 am

I've addressed QA bit here – https://zerodha.com/varsity/module/trading-systems/ but yes, I'll share pointers on what else can be done at the end of each module.

Reply

23. *Mayur* says:
September 3, 2019 at 12:01 am

I can see learning pdf are available for all modules except last module i.e. Personal Finance. Pl hele me to download

Reply

- *Karthik Rangappa* says:
September 3, 2019 at 8:36 am

PDFs will be made available once the module is completed, Mayur. This module is just getting started.

Reply

24. *Ramamurthy* says:
September 4, 2019 at 10:43 am

Karthik I have been a successful trader since the last 6 months thanks to 3 strategies of your I've been able to implement. I'm curious to know, what is your portfolio of Trading Strategies? Can you let us know? Which strategy do do you use most often? Thanks.

Reply

- *Karthik Rangappa* says:
September 4, 2019 at 12:35 pm

I've stopped active trading, simply because I'm unable to find the time it requires. I invest in stocks and follow FA which I've discussed here – https://zerodha.com/varsity/module/fundamental-analysis/

Reply

25. *Prashant* says:
September 5, 2019 at 1:49 pm

Dear sir ,
recently i have been reading about the ETF and i have the doubt regarding it.
for example the nifty index has 50 companies listed in it and it tracks their performance. and similarly the niftybees(ETF) try to replicate the nifty index movement. suppose in a year, one of the company gets de-listed form the index and the new company takes it place . then what will happen to the valuation of ETF in this case. As ETF tracks one of the de-listed companies and no the new one.

Reply

- *Karthik Rangappa* says:
September 6, 2019 at 11:39 am

The ETF company will track the new one. The ETF is an exact mirror image of its underlying.

Reply

26. *Sharvin* says:
September 6, 2019 at 7:09 pm

Hii, Team Zerodha. The whole chapters have made me knowledgable about investing in equities.
"I appreciate for your this work."
But, I want to know about 'MUTUAL FUNDS' and 'SIP'. So my concepts will get cleared about these topics

Reply

-  *Karthik Rangappa* says:
  September 7, 2019 at 12:12 pm

  Sharvin, the same will be available here soon – https://zerodha.com/varsity/module/personalfinance/

  Reply

27.  *ninan* says:
September 19, 2019 at 12:26 pm

Sir

This is only a suggestion, can you please write your articles with Lacks as the basis instead of millions. For a senile person like me, who loves to read your articles, it takes up lot of time in deciphering which is crore and which is 10 lacks.

Boss also write about ETF (if possible) and is this product good to park a portion of the retired corpus in ETFs. I put in a small amount in NIFTY ETF and though markets fell badly (19.09.2019), the impact on the ETF is not drastic. I do not believe in Mutual Funds at all (debt MF). These are the guys who were paid to ensure our money was professionally managed, do proper credit assessment, but it seems they just invested based on rating agencies.

Please advise.
Ninan

Regards
Ninan

Reply

-  *Karthik Rangappa* says:
  September 20, 2019 at 11:33 am

  Glad to know that you like reading the article here ☺

  I don't think I write this keeping the million in the denomination. Prefer Crore as Indians are used to this. But will try and see if I can tweek this. ETF and indexing is a core concept, I will write about this.

  Reply

**Post a comment**

Name (required)
Mail (will not be published) (required)
Comment
Post comment





# Modules

- **1. Introduction to Stock Markets**

14 chapters

- **2. Technical Analysis**

  21 chapters

- **3. Fundamental Analysis**

  16 chapters

- **4. Futures Trading**

  12 chapters

- **5. Options Theory for Professional Trading**

  23 chapters

- **6. Option Strategies**

  13 chapters

- **7. Markets and Taxation**

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- **8. Currency, Commodity, and Government Securities**

  19 chapters

- **9. Risk Management & Trading Psychology**

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- **10. Trading Systems**

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