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Module 11 — Personal Finance

Chapter 4

The retirement problem (Part 1)

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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 J

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 the 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 to 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 learnt 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 –

Future value = P*(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)

= 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)

= 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 which 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	2,031,813
2045	26	600,000	2,133,404
2046	27	600,000	2,240,074
2047	28	600,000	2,352,077
2048	29	600,000	2,469,681
2049	30	600,000	2,593,165
2050	31	600,000	2,722,824
2051	32	600,000	2,858,965
2052	33	600,000	3,001,913
2053	34	600,000	3,152,009
2054	35	600,000	3,309,609
2055	36	600,000	3,475,090
2056	37	600,000	3,648,844
2057	38	600,000	3,831,286
2058	39	600,000	4,022,851
2059	40	600,000	4,223,993
2060	41	600,000	4,435,193
2061	42	600,000	4,656,953
2062	43	600,000	4,889,800
2063	44	600,000	5,134,290
2064	45	600,000	5,391,005
Total Corpus required at the start of the retirement year i.e. 2044			**72,574,839**

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

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

4.4 – 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.

Module 11

Chapters

23 comments

1. *prateek* says:
September 9, 2019 at 12:53 pm

I think you should be front loading all the FV calculations going into the retirement to the year 2044, which means a PV calculation of all these FV calculations to come to the exact value req. as of 2044(As the money saved till this point will keep on earning interest for next 20 years of retired life).

Reply

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

A couple of things, Prateek – (1) Even if you front load, how do you work yourself up to ensure you save enough? That this point that I'm trying to make, and hopefully will in the next chapter (2) The trick with personal finance is to ensure we take a conservative approach and be prepared for a worst-case scenario. This will give us enough margin of safety.

Reply

2. *Avinash* says:
September 9, 2019 at 10:06 pm

Sir,
i have a problem in excuting bo (bracket order) in nifty oct fut, it rejecting last 3 day last friday i complaint about this to zerodh team but no use , with the any desk platform they try to help me they failed..but same bo for nifty sep fut they working well, in my dad accout also nifty oct fut bo not working, rejection reson is showing that insufficient balance, but i have 2 lac , please help me…. Thank you

Reply

   - *Karthik Rangappa* says:
September 10, 2019 at 11:07 am

Suggest you reach out to the support team for this, Avinash.

Reply

3. *BMS Iyer* says:
September 12, 2019 at 2:20 pm

Hi
A good article that brings out the effect of inflation and the need to save more.
Can you also advise on the ways of saving with better returns especially for those who do not have pension
Also some comparison of options (like ETF, MF, ULIP, Insurance…etc) would help
Thanks

Reply

- *Karthik Rangappa* says:
September 13, 2019 at 11:15 am

Glad you liked it ☺
We will include all those topics and more!

Reply

4. *siddharth* says:
September 16, 2019 at 5:23 pm

Sir,
Please post the second part quickly very scared after looking at the Retirement Amount

Reply

- *Karthik Rangappa* says:
September 17, 2019 at 11:15 am

I will, Siddharth ☺

Reply

5. *ninan* says:
September 19, 2019 at 12:09 pm

Sir
This article is good for the young generation to let them know how much is required as retirement corpus. Could you please (if possible) write about what should a retiree do on the assumption that he toiled and saved and created the corpus of 7.22 cr. Then what? How do a retiree manage his corpus. The evil inflation, medical expenses etc are all real. What should a retiree do.
I did an extensive search (cannot call it research – as it is for the PHDs) for how to manage a corpus on retirement and beat inflation.
All the good writers have written upto the corpus creation and not what happens next.

Regards
Ninan

Reply

- *Karthik Rangappa* says:
September 20, 2019 at 11:31 am

That's an excellent point. I'll try and include this in this module.

Reply

6. *Sundeep* says:
September 20, 2019 at 10:12 am

Karthik I read an article saying the promoters of JSW Steel has released the pledged shares worth 1150 crs. From my understanding, shares are pledged by owners to lenders, so only the lenders have the power to release it after the payment is made, right? Please help me understand this article. I'm posting the link below. Thank you.

https://www.business-standard.com/article/companies/jsw-steel-promoter-companies-release-pledged-shares-worth-rs-1-150-crore-119091901010_1.html

Reply

- *Karthik Rangappa* says:
September 20, 2019 at 12:24 pm

Thats right. When the promoters bring back to the principal and accrued interest, the pledge is released and the shares are given back to the promoters.

Reply

7. *Sundeep* says:
September 20, 2019 at 11:33 am

I do have another question too. Although you have done an excellent job of demystifying FA on stocks, I do feel each sector needs to be analysed with separate set of tools.
1.Can you let me know a book which deals with sectoral analysis?
2. How do we develop a framework for each sector? Please point me toward a resource or something. Thank you.

Reply

8. *Sunny Mittal* says:
September 20, 2019 at 11:23 pm

Hi Karthik,

Another excellent chapter. Although i think this is a vast topic and probably nothing can be a complete guide for this. But I would suggest to add details on below things also

1. On things like Insurance (Life, Medical) also, as i have seen and heard personally lot of stories where people's savings have been wiped out by such things.

2. Utilizing Tax Saving instruments properly (80C, NPS, PF etc) as that automtically accumulates a lot of money for you while providing you tax benefits also.

3. Your thoughts on buying property, car etc. How to plan these things.

Some other things which may be useful.

Reply

- *Karthik Rangappa* says:
September 21, 2019 at 11:20 am

Sunny, yes all these things and more will be added to this module ☺

Reply

9. *Yuvraj* says:
September 23, 2019 at 8:17 pm

Query

Query on compounding, I had bought 100 shares of X company based on fundamental and after 4 months l I see profit is around 30% hence I sold 50 shares and booked the profit.

After few weeks, share price came down so I bought again.

In above example how compounding effect is taken into consideration for new bought 50 shares and 50 existing shares of same company?

Regards,
Yuvraj

Reply

-  *Karthik Rangappa* says:
  September 24, 2019 at 11:31 am

  Yuvraj, there is compounding here ☺

  Compounding occurs when you hold positions for multi-years. In your case, it is a simple 'absolute return'.

  Reply

10.  *Premaleela* says:
September 24, 2019 at 8:02 am

Sir I consider myself a very disciplined learner and all thanks to you I've been able to learn a lot about investing. However, there's a lot of things regarding economics and other things that you haven't covered here, I'm having a hard time understanding. How would you suggest I go about learning this? I read business newspapers and I see a lot of stuff that I have no idea about. Thank you.

Reply

-  *Karthik Rangappa* says:
  September 24, 2019 at 11:40 am

  I'm glad you liked reading up on Varsity ☺

  Macroeconomics is a huge topic, I'm not sure if I'm the right person to discuss the same. However, I'll try and put some material on this topic.

  Reply

11.  *Vivek* says:
September 25, 2019 at 9:14 am

Let me know if I am wrong in my calculations, I will retire on 2044 with corpus 3.2 Cr and put it in fixed deposits and spend interest . My principal will remain same…
why we calculating in a way where I am taking 50,000/month from principal.

Reply

-  *Karthik Rangappa* says:
  September 25, 2019 at 11:58 am

  Vivek, you also need to account for inflation and the interest rate in 2044 ☺

  Reply

12.  *Vivek Kumar* says:
October 2, 2019 at 12:43 pm

Sir kindly add a chapter regarding health insurances ,how to choose best insurance for our family, what parameters to consider ?

Reply

-  *Karthik Rangappa* says:
October 2, 2019 at 5:15 pm

Yes sir, will certainly add that.

Reply

Post a comment

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