CONTINUOUS ASSESSMENT 2

TOPIC: Present worth and Future worth analysis in respect to Investment Decision

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Present Value in respect to Investment Decision

Present value is nothing but how much the future sum of money worth today. It is one of the important concepts in finance and it is a basis for stock pricing, bond pricing, financial modeling, banking, and insurance, etc. Present value provides us with an estimated amount to be spent today to have an investment worth a certain amount of money at a specific point in the future. **Present value is also called a discounted value.** It is an indicator for investors that whatever money they will receive today can earn a return in the future. With the help of present value, method investors calculate the present value of a firm's expected cash flow to decide if a stock is worth investing in today or not.

The formula for calculating present value 'PV' is: **$PV = CF/(1+r)^n$**

Here 'CF' is future cash flow, 'r' is a discounted rate of return and 'n' is the number of periods or years.

Example:

Let's say that you have been promised by someone that he will give you ₹10,000.00, 5 years from today and interest rate is 8% so no we want to know what the present value of ₹10,000.00 which you will receive in future so,

$PV = ₹10,000/(1+0.08)^5$

or, PV = ₹**6805.83** (to the nearest decimal)

So present-day value of ₹10,000.00 is ₹**6805.83**

Future Value in respect to Investment Decision

Future Value is the amount of money that will grow over a period of time with simple or compounded interest. It is one of the most important concepts of finance and it is based on the time value of money. Investors use this method to know what will be the future value of their investment after a certain period of time calculates based on the assumed growth rate. So future value basically tells us how much money you will get in any sort of investment in the coming future.

Future value is calculated using the formula: $\mathbf{FV = PV\ (1+r)^n}$

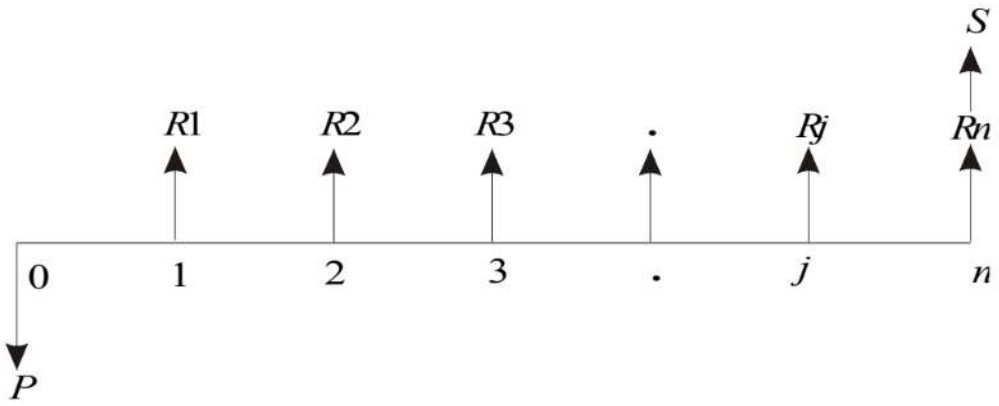
Here 'PV' Present Value, 'FV' is future Value; 'r' is the rate of return and 'n' is a number of periods or year.

Example:

Suppose Ram is investing a sum of ₹3000 in some fixed deposit for one year and for the same Ram will receive interest with a rate of 7%. So at the end of the year Ram will receive ₹3210 that is ₹3000 principal plus ₹210 interest. So we can say that

₹3210 is the future value of today's money that is of ₹3000. Similarly, we can calculate the future value, 'FV', of ₹3210 after 2 years and so on using the compound interest formula.

REVENUE-DOMINATED CASH FLOW DIAGRAM



P represents an initial investment and Rj the net revenue at the end of the jth year. The interest rate is i, compounded annually. S is the salvage value at the end of the nth year.

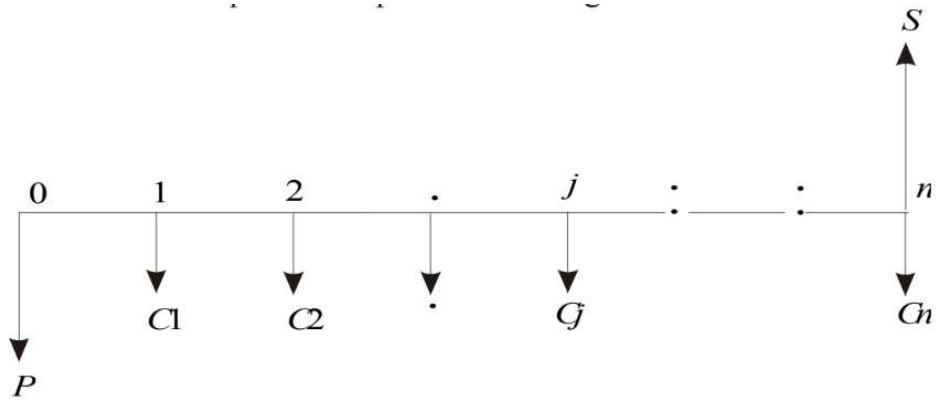
To find the present worth of the above cash flow diagram for a given interest rate, the formula is

PW(i) = – P + R1[1/(1 + i)^1] + R2[1/(1 + i)^2] + …
+ Rj[1/(1 + i)j] + Rn[1/(1 + i)^n] + S[1/(1 + i)^n]

In this formula, expenditure is assigned a negative sign and revenues are assigned a positive sign.

If we have some more alternatives which are to be compared with this alternative, then the corresponding present worth amounts are to be computed and compared. Finally, the alternative with the maximum present worth amount should be selected as the best alternative.

COST-DOMINATED CASH FLOW DIAGRAM



P represents an initial investment, Cj the net cost of operation and maintenance at the end of the jth year, and S the salvage value at the end of the nth year.

To compute the present worth amount of the above cash flow diagram for a given interest rate i, we have the formula

PW(i) = P + C1[1/(1 + i)^1] + C2[1/(1 + i)^2] + ... + Cj[1/(1 + i) j]+ Cn[1/(1 + i)^n] – S[1/(1 + i)^n]

In the above formula, the expenditure is assigned a positive sign and the revenue a negative sign. If we have some more alternatives which are to be compared with this alternative, then the corresponding present worth amounts are to be computed and compared. Finally, the alternative with the minimum present worth amount should be selected as the best alternative.

Comparison between Present Value and Future Value in respect to Investment Value

Let's look at the comparison between Present Value and Future Value:

The Basis Of Comparison Between Present Value vs Future Value	Present Value	Future Value
Meaning	It is the current value of future cash flow or future value.	It is the amount of money which will grow over a period of time with simple or compounded interest.
Rate	Involved both discounted as well as the interest rates.	Involved only interest rate.
Decision	Investors can make the decision whether to accept/invest or reject the proposal with help of the PV method.	FV shows the only future gain of total investment so the importance for investment decision making is less.
Process/ Method	Discounted	Capitalization
Formula	$PV = CF/(1+r)^n$	$FV = PV \text{ or } CF\ (1 + r)^n$
Concept	What amount should we invest today to get a specific amount in the future	If we invest some money today what will be the amount we get at the future date.

Conclusion

The time value of money is a basic financial concept that holds that money in the present is worth more than the same sum of money to be received in the future. This is true because money that you have right now can be invested and earn a return, thus creating a larger amount of money in the future. It is clear that time value is the economic concept, and calculation of present value and future value provides basic data to the investor on which to make a rational investment decision. Present value is the sum of money of future cash flows today whereas future value is the value of future cash flows at a specific date. Present value is calculated by taking inflation into consideration whereas a future value is a nominal value and it adjusts only interest rate to calculate the future profit of the investment. There is one similarity that exists between the present value vs future value that is if the interest rate and period remain constant then future value and present value increase or vice versa. The calculation of present value is very important for business it allows the investor to compare the cash flow at different times. In short present value vs future value is a lump-sum payment and a series of equal payment over equal periods of time is called as an annuity.

References

Books:

1. *'Economics for Engineers' BY Panneerselvam*

Websites:

1. https://corporatefinanceinstitute.com/resources/knowledge/valuation/time- value-of-money/
2. https://www.investopedia.com/articles/fundamental-analysis/09/net- present-value.asp
3. https://www.fao.org/3/w4343e/w4343e07.htm