

Classification of Cost of Capital, and explain their Types (With Calculations)

The following points highlight the five types of costs included in the list of cost of capital. They are: 1. Explicit Cost and Implicit Cost, 2. Future Cost and Historical Cost, 3. Specific Cost, 4. Average Cost and Marginal Cost, and 5. Overall Cost or Composite or Combined Cost.

1. Explicit Cost and Implicit Cost:

The explicit cost of any sources of capital may be defined as the discount rate that equates the present value of the cash inflows that are incremental to the taking of the financing opportunity with the present value of its incremental cash outflow.

When a firm raises funds from different sources, it involves a series of cash flows. At its first stage, there is only a cash inflow by the amount raised which is followed by a series of cash outflows in the form of interest payments, repayment of principal or repayment of dividends.

Therefore, if a firm issues, 1,000, 8% debentures of Rs. 100 each redeemable, after 10 years at par, there will be an inflow of cash to the extent of Rs. 1,00,000 (1,000 x Rs. 100) at the beginning, but the annual cash outflow will be Rs. 8,000 (Rs. 1,00,000 x 8/100) in the form of interest.

There will also be an outflow of Rs. 1,00,000 at the end of the 10th year when the debentures will be redeemed. We know that a firm can raise its funds by issuing equity or preference shares, or debentures, or by selling assets etc., which are known as sources of funds. The cash outlays for this purpose may be in the form of interest/dividends, repayments of principal.

The equation used in general in order to calculate the explicit cost of capital is:

$$I_0 = \frac{C_1}{(1+k)^1} + \frac{C_2}{(1+k)^2} + \frac{C_3}{(1+k)^3} + \dots + \frac{C_n}{(1+k)^n}$$

Where,

I_0 = Net funds received by the firm at time 0;

C_1 = Outflow in the respective period;

k = Explicit Cost of Capital;

n = Period for which funds are provided.

It is evident from the above equation that I_0 is the internal rate of return of the cash flow of financing opportunity. Therefore, if a firm takes any non-interest bearing loan, there will be no explicit cost since there is no outflow of cash by way of interest payment although the principal must be repaid.

From the above, it becomes clear that the explicit cost will arise when capital is raised and which is also the IRR of the financial opportunity. Implicit cost of capital, on the other hand, arises when a firm considers alternative uses of the funds raised. That is, it is the opportunity cost. In other words, it is the rate of return which is available on other investment in addition to what is being considered at present.

To sum up, the implicit cost may be defined as the rate of return associated with the best investment opportunity for the firm and its shareholders that will be foregone if the project presently under consideration by the firm were accepted. In this respect it may be mentioned that if earnings are retained by a firm, the implicit cost is the income which the shareholders could have earned if such earnings would have been distributed and invested by them.

Therefore, explicit cost will arise only when funds are raised, whereas implicit cost will arise when they are used.

2. Future Cost and Historical Cost:

Future Costs are the expected costs of funds for financing a particular project. They are very significant while making financial decisions. For instance, at the time of taking financial decisions about the capital expenditure, a comparison is to be made between the expected IRR and the expected cost of funds for financing the same, i.e. the relevant costs here are future costs.

Historical costs are those costs which have already been incurred in order to finance a particular project. They are useful while projecting future costs. In short, historical costs are very important by the amount they keep in predicting the future costs. Because, they supply an evaluation of performance in comparison with standard and/or predetermined costs.

3. Specific Cost:

The cost of each component of capital, viz., equity shares, preference shares, debentures, loans etc. are termed specific or component cost of capital which is the most appealing concept. While determining the average cost of capital, it requires consideration about the cost of specific methods for financing the projects.

This is particularly useful where the profitability of the project is evaluated on the basis of the specific source of funds taken for financing the said project. For instance, if the estimated cost of equity capital of a firm becomes 12%, that project which is financed by the equity shareholders' fund will be accepted provided the same will yield a return of 12%.

4. Average Cost and Marginal Cost:

Average Cost:

The average cost of capital is the weighted average cost of each component of the funds invested by the firm for a particular project, i.e. percentage or proportionate cost of each element in the total investment. The weights are in

proportion to the shares of each component of capital in the total capital structure or investment.

But average cost has the following three computational problems:

- (i) It refers to the measurement of cost of each specific source of capital;
- (ii) It also requires the assignment of proper weights to each component of capital;
- (iii) Is the overall cost of capital (discussed subsequently) affected by the changes in the composition of the capital?

Marginal Cost:

According to the Terminology of Cost Accountancy (ICMA, Para 3.603), Marginal Cost is the amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit. Same principle is being followed in cost of capital. That is, marginal cost of capital may be defined as the cost of obtaining another rupee of new capital.

Generally, a firm raises a certain amount of funds for fixed capital investment. But marginal cost of capital reveals the cost of additional amount of capital which are raised by a firm for current and/or fixed capital investment. When the firm procures additional capital from one particular source only i.e. not from the different sources in given proportion the marginal cost, in that case, is known as specific or explicit cost of capital. In other words, marginal cost of capital may be more or may be less than the average cost of capital of a firm.

Illustration 1:

A firm presents the following information relating to cost of capital:

Sources	Amount Rs.	After-tax Cost of Capital
Equity	50,000	12%
Debt	50,000	4%

The firm wants to raise a fund of Rs. 25,000 for the purpose of an investment proposal. It also decides to take the same from a financial institution at a cost of 10%.

Compute the marginal cost of capital and compare the same with average cost of capital before and after additional financing, assuming that the corporate rate of tax is 50%.

Solution:

It becomes clear from the above problem that the marginal cost is Rs. 25,000 which is 10% before tax and 5% after tax (i.e. 10% – 50% of 10%). The same is also known as specific or explicit cost of financing Rs. 25,000 since the source is only one, i.e. financial institution.

But the same also differs from the average cost calculated as:

Before Additional Financing	Proportion	Cost After-tax	Weighted Average Cost (%)
Equity	0.5	12	6.0
Debt	0.5	4	2.0
	<u>1.0</u>		<u>8.0</u>
After financing Rs. 25,000			
	Proportion*	Specific Cost after Tax	Weighted Average Cost (%)
Equity	0.4	12	4.8
Debt			
Old	0.4	4	1.6
New	0.2	5	1.0
	<u>1.0</u>		<u>7.4</u>

Thus, it is evident from the above that the weighted average cost comes down from 8% to 7.4%. The cost of new debt is higher than the cost of old debt. Again, the cost of new debt is lower than the cost of equity capital. Therefore, the average cost of capital reduces since there is an increase in the proportion of debt capital to total capital invested.

While raising additional capital a firm must concentrate on the optimum capital structure and should use the different sources of financing proportionately for the purpose of maintaining the optimum capital structure. In the circumstance, the present book value may be considered as weight in order to compute the average cost of capital. If the capital is raised from different sources at a given proportion, it needs a computation of average cost of capital to know the cost of the total additional amount raised.' So, in this case, marginal cost of capital may also be known as weighted average cost for the same. There will be no difference between the two provided there is no change in specific cost.

Consider the following illustration.

Illustration 2:

In Illustration 1, it is considered that the additional amount of Rs. 25,000 will be raised by the firm from equity and debt at the existing specific cost, there will be no difference between the weighted average cost and the marginal cost of capital as both of them will be one or the same as presented:

Solution :

Sources	Amount Rs.	Proportion Tax (%)	Specific Cost after Tax (%)	Marginal Cost (%)
Equity	12,500	0.5	12	6.0
Debt	12,500	0.5	4	2.0
		<u>1.0</u>		<u>8.0</u>

Therefore, the cost of raising Rs. 25,000 is only 8%, which is the marginal cost. The same should, be measured with the help of weighted average cost for raising the additional fund of Rs. 25,000.

It has already been highlighted above that, if the specific cost changes, there will be a difference between the marginal cost of capital and the average cost of capital of a firm even if additional capital is procured at a given proportion. It should be remembered that the marginal cost of capital will continue to be the weighted average cost of new capital for a firm.

The following illustration will, however, make the principle clear:

Illustration 3:

If it is assumed that cost of debt is 10% (before tax) and rate of tax is 50% and the firm prefers to raise Rs. 25,000 proportionately, compute the marginal cost of capital and the average cost of capital.

Solution :

(a) Marginal Cost of Capital

Sources	Amount Rs.	Proportion Tax (%)	Specific Cost after Tax (%)	Marginal Cost (%)
Equity	12,500	0.5	12	6.0
Debt	12,500	0.5	5	2.5
		<u>1.0</u>		<u>8.5</u>

(b) Average Cost of Capital

Sources	Amount Rs.	Proportion Tax (%)	Cost after Tax (%)	Weighted Average Cost (%)
Equity	62,500	0.5	12	6.0
Debt :				
Old	50,000	0.4	4	1.6
New	12,500	0.1	5	0.5
		<u>1.0</u>		<u>8.1</u>

It becomes clear from the above that overall cost of capital is raised upward as there is an increase in the cost of new debt capital. The same actually differs from the marginal cost of 8.5% for raising additional capital of Rs. 25,000 to 8.1%.

The relationship between marginal cost and average cost of capital may be presented with the help of a graph given by Brigham:

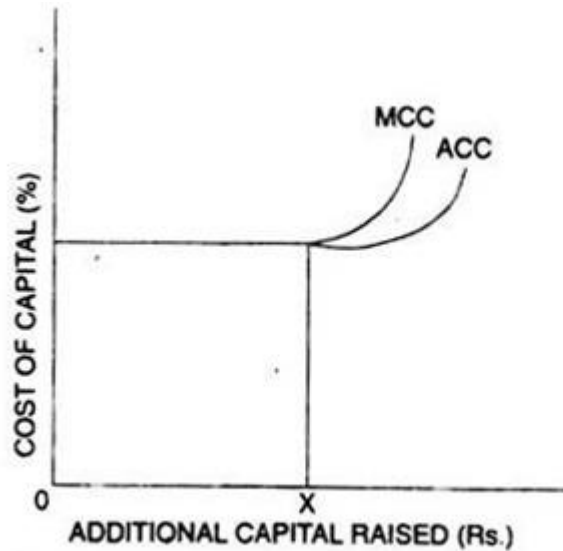


Fig. 10.1 : Relationship between Marginal Cost and Average Cost of Capital

From Fig. 10.1, it becomes clear that if additional capital is raised up to the amount X, the marginal cost of capital (MCC) and also the average cost of capital (ACC) are identical. Therefore, both of them are rising although the ACC rises at a lesser rate than the MCC.

5. Overall Cost or Composite or Combined Cost:

It may be recalled that the term 'cost of capital' has been used to denote the overall composite cost of capital or weighted average of the cost of each specific type of fund, i.e., weighted average cost. In other words, when specific costs are combined in order to find out the overall cost of capital, it may be defined as the composite or weighted average cost of capital.

Thus, the weighted average is used on the ground that the proportions of various sources of funds are different in the total capital structure of a firm. That is why overall cost of capital recognises the relative proportions of different sources and, as such, the weighted average and not the simple average.

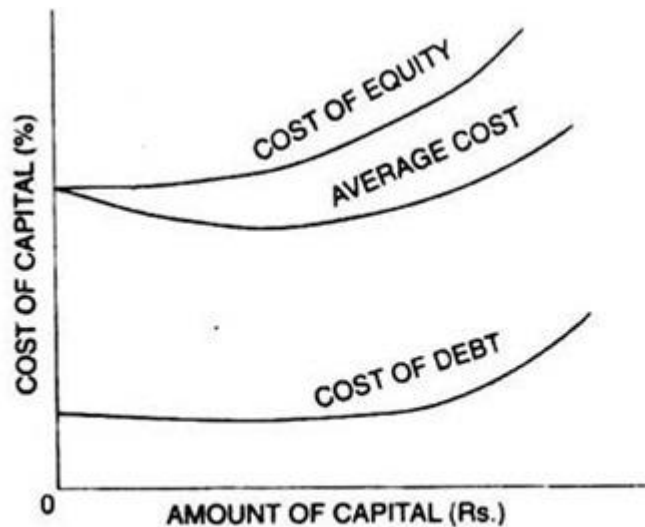


Fig. 10.2 : Relationship between Specific Cost and Average Cost of Capital

Overall cost of capital is used for the following justifications:

- (i) The firm can increase the market price per share after accepting projects which yield more than the average-cost.
- (ii) It recognises the fact that it is better to use different sources of finance instead of a single one.
- (iii) It also provides a basis for comparison among projects as a standard or a cut-off rate. One point in this respect is to be noted, that is, if specific costs are taken as the cost of financing, proper comparison is not possible. In that case, specific costs will reveal shifting standard at certain intervals. This particular attention has been depicted in the graph (Fig. 10.2) which expresses the relationship between the specific cost and the average cost of capital.

Computation of Overall Cost of Capital:

The computation of overall cost of capital involves the following steps:

- (i) Compute specific cost for each individual project;
- (ii) Assign proper weights to specific costs;
- (iii) Multiply the cost of each of the sources by the appropriate weight;
- (iv) Divide the total weighted cost by the total weights in order to get the overall cost of capital.

Needless to mention that the weighted cost of capital may be changed due to (i) change in the cost of each component, or (ii) change in weight, or (iii) both.