The MM hypothesis of Capital Structure

The Modigliani and Miller approach to capital theory, devised in the 1950s, advocates the capital structure irrelevancy theory. This suggests that the valuation of a firm is irrelevant to the capital structure of a company. Whether a firm is highly leveraged or has a lower debt component has no bearing on its market value. Rather, the market value of a firm is solely dependent on the operating profits of the company.

The capital structure of a company is the way a company finances its assets. A company can finance its operations by either equity or different combinations of debt and equity. The capital structure of a company can have a majority of the debt component or a majority of equity, or an even mix of both debt and equity. Each approach has its own set of advantages and disadvantages. There are various capital structure theories that attempt to establish a relationship between the financial leverage of a company (the proportion of debt in the company's capital structure) with its market value. One such approach is the Modigliani and Miller Approach.

ASSUMPTIONS OF MODIGLIANI AND MILLER APPROACH::

There are no taxes.

Transaction cost for buying and selling securities, as well as the bankruptcy cost, is nil.

There is a symmetry of information. This means that an investor will have access to the same information that a corporation would and investors will thus behave rationally.

The cost of borrowing is the same for investors and companies.

There is no floatation cost, such as an underwriting commission, payment to merchant bankers, advertisement expenses, etc.

There is no corporate dividend tax.

MODIGLIANI AND MILLER APPROACH: TWO PROPOSITIONS WITHOUT TAXES

PROPOSITION 1

With the above assumptions of "no taxes", the capital structure does not influence the valuation of a firm. In other words, leveraging the company does not increase the market value of the company. It also suggests that debt holders in the company and equity shareholders have the same priority, i.e., earnings are split equally amongst them.

PROPOSITION 2

It says that financial leverage is in direct proportion to the cost of equity. With an increase in the debt component, the equity shareholders perceive a higher risk to the company. Hence, in return, the shareholders expect a higher return, thereby increasing the cost of equity. A key distinction here is that

Proposition 2 assumes that debt shareholders have the upper hand as far as the claim on earnings is concerned. Thus, the cost of debt reduces.

MODIGLIANI AND MILLER APPROACH: PROPOSITIONS WITH TAXES (THE TRADE-OFF THEORY OF LEVERAGE)

The Modigliani and Miller Approach assumes that there are no taxes, but in the real world, this is far from the truth. Most countries, if not all, tax companies. This theory recognizes the tax benefits accrued by interest payments. The interest paid on borrowed funds is tax deductible. However, the same is not the case with dividends paid on equity. In other words, the actual cost of debt is less than the nominal cost of debt due to tax benefits. The trade-off theory advocates that a company can capitalize its requirements with debts as long as the cost of distress, i.e., the cost of bankruptcy, exceeds the value of the tax benefits. Thus, the increased debts, until a given threshold value, will add value to a company.

This approach with corporate taxes does acknowledge tax savings and thus infers that a change in the debt-equity ratio has an effect on the WACC (Weighted Average Cost of Capital). This means that the higher the debt, the lower the WACC. The Modigliani and Miller approach is one of the modern approaches of Capital Structure Theory.

Numericals:

Two firms A and B falling in the identical risk class have net operating income of Rs. 2,00,000 each. Firm A is an unlevered concern having all equity but Firm B is levered concern as it has Rs. 10,00,000 of 10% bonds outstanding. The equity capitalisation rate of firm A is 12.5% and of firm B is 16.0%.

Solution:

Calculation of total value of the firns A and B

	Firm A	Firm B
Net operating income	Rs 200000	200000
Less: Interest	Nil	100000
Equity earnings	200000	100000
Equity cost %	.125	.16
Total market value of equity	1600000	625000
Total market value of debt	-	1000000
Total value of entire firm	1600000	1625000

Cost of capiital of overall firm	%	12.50	12.30

It may be noted from the above that the total value of firm B which is levered is higher than the unlevered firm A. However, this state of affairs cannot exist for a long time as the rational investors according to M-M approach will substitute personal leverage for corporate leverage and adjust their portfolios to take advantage of price differential and thereby improve their earnings.

This behaviour of the investors will bring about the values of the two firms to an identical level.

The arbitrage process will work as under:

Suppose a rational investor owns 10 percent shares of Firm B. He thus holds shares worth Rs. 62,500 (10% of Rs. 6,25,000) and his earnings will amount to Rs. 10,000 (10% of Rs. 1,00,000). He will liquidate his holdings of Firm B and use the proceeds to buy shares of Firm A. Since firm A is unlevered the investors' investment will be exposed to relatively less risk. He will borrow additional funds equal to his share in the Firm B's debt on his personal account. In other words, he will substitute personal leverage (home made leverage) for corporate leverage. Thus, by making personal borrowing the investor is introducing leverage in capital structure of firm A. In our example the investor will borrow Rs. 1, 00,000 at 10% interest.

The investor would then buy 10 percent shares of Firm A the unlevered one for Rs. 1,60,000.

Before the above dealings the investor's expected return on his investment in Firm B was 16 percent on a Rs. 62,500 investment or Rs. 10,000. His expected return on investment in Firm A is 12.5 percent on a Rs. 1,60,000 investment or Rs. 20,000.

Out of this return he will have to pay interest on the debt taken by him leaving Rs. 10000 as his net return as calculated below:

Return on investment on firm A :	Rs 20000
Less: Interest (.10× Rs 100000) :	Rs 10000
Net return / income :	Rs 10000

We thus find that the investor is getting a net return of Rs. 10,000 from his investment in firm A, the same amount which he was getting earlier from firm B. But investment outlay defrayed by him to get a return of Rs. 10,000. From firm A is Rs. 60,000 which is less than

the Rs. 62,500 investment in Firm A. Because of this benefit the investor would always prefer to invest in firm A.

The behaviour of a large number of investors described above will cause drop in share prices of firm B and rise in that of firm A. This arbitrage process will continue till the opportunity of making same amount of return with investment outlay exists. At the point where there will be no such opportunity the total value of the two firms will be identical.