Financial Management

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Lecture 8

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Capital structure in a perfect market

Capital structure: the relative proportions of outstanding debt, equity, and other securities that a firm has.

Unlevered equity: equity in a firm with no debt.

Levered equity: equity in a firm with outstanding debt.

Modigliani and Miller argue that with perfect capital markets, the total value of a firm should not depend on its capital structure. The firm's total cash flows still equal the cash flows of the project, and therefore have the same present value. While debt may be cheaper when considered on its own, it raises the cost of capital for equity, so the firm's average cost of capital does not change.

Capital structure in a perfect market

Conditions to have **perfect capital markets**:

1. Investors and firms can trade the same set of securities at competitive market prices equal to the present value of their future cash flows.
2. There are no taxes, transaction costs, or issuance costs associated with security trading.
3. A firm's financing decisions do not change the cash flows generated by its investments, nor do they reveal new information about them.

Capital structure in a perfect market

MM Proposition I: In a perfect capital market, the total value of a firm's securities is equal to the market value of the total cash flows generated by its assets and is not affected by its choice of capital structure.

The value of the levered firm V_L (i.e., financed with both equity and debt) is equal to the value of the unlevered firm V_U (i.e., financed only with equity):

$$V_L = V_U$$

Capital structure in a perfect market

MM Proposition II: The cost of capital of levered equity increases with the firm's market value debt-equity ratio:

$$R_E = R_U + \frac{D}{E}(R_U - R_D)$$

where D and E are the market value of debt and equity respectively, while R_E, R_U and R_D are the returns of levered equity, unlevered equity, and debt, respectively.

Even though debt is generally cheaper than equity, increasing debt makes the latter more expensive. So, in perfect capital markets, the relative proportion of debt and equity does not impact the total cost of financing.

Capital structure in a perfect market

What about the effect of a capital increase on the existing shareholders?

Raising additional equity capital by issuing additional shares of already listed stocks is called **seasoned equity offering**, or **seasoned issue**, or even simply capital increase.

Issuing new shares has a dilutive effect: the total amount of shares on the market increases. Does this cause a drop in the share price? **NO**

The increase in shares supply is offset by the increase in the firm's assets that result from the cash it receives from the issuance.

Capital structure in a perfect market

While it has no direct impact on the price of the shares owned by the existing shareholders, a capital increase can reduce their voting power, as these shareholders now hold a lower proportion of the total market capitalization.

There often are legal mechanism to prevent this. Most notably, existing shareholders might have pre-emptive rights, i.e., they have a right to buy additional shares before they are offered to the general public.

This allows existing shareholders to keep (if they want) their proportion of ownership of the company.

Capital structure with corporate taxes

The assumption of no taxes is obviously not realistic. Therefore, we now consider the effect of corporate taxes.

The **MM Proposition I with taxes** becomes:

$$V_L = V_U + TD$$

where T is the tax rate.

As interest payments on debt are usually tax-deductible, the value of the levered company is higher than the value of the unlevered company.

Capital structure with corporate taxes

The **MM Proposition II with taxes** becomes:

$$R_E = R_U + \frac{D}{E}(R_U - R_D)(1 - T)$$

The cost of equity still rises as debt increases, but not as fast as without taxes, because debt acts as a tax shield.

Therefore, ignoring the financial distress that excessive debt can cause, more debt decreases the WACC, and therefore it increases the firm value.

Capital structure with corporate taxes

Excessive debt can lead to bankruptcy. Therefore, increasing debt cannot be done without limits.

In practice managers need to balance various factors to achieve an optimal capital structure.

While in reality it is not completely true that capital structure does not impact the value of a firm, the main message of M-M however still largely holds: the most important thing is not how the money is raised, but how effectively it is invested.

Payout policy

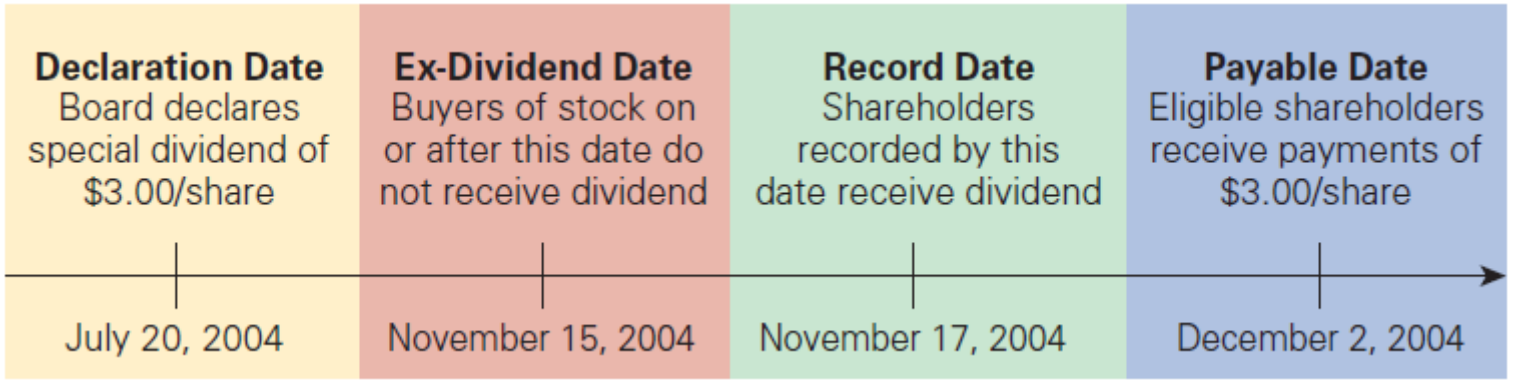
Payout policy: the way a firm chooses between alternative uses of free cash flow (i.e. flow available after the outflows necessary to support operations and maintain capital assets).

On the **declaration date**, the board of directors authorizes a divided of a certain amount, to be paid on the **record date**.

Only shareholders who purchase the stock at least three days prior to the record date receive the dividend. The date two business days prior to the record date is known as the **ex-dividend date**; anyone who purchases the stock on or after the ex-dividend date will not receive the dividend.

On the **payable (or distribution) date** the firm actually makes the payment.

Payout policy



Special dividend: a non-recurring dividend, usually much larger than a regular dividend.

Other types of payments the firm can do in special cases:

- Return of capital: investors get back a portion of their investment that is not considered income or capital gain
- Liquidating dividend: paid during partial or full liquidation

Payout policy

Share repurchase (or buyback): the firm uses cash to buy shares of its own outstanding stock. Can be done via:

- open market repurchase: the company buys back its shares directly on the market. It is the most common method
- tender offer: the firm offers to buy back the shares at a predetermined price over a short period of time
- Dutch auction: the firm offers different prices and investors state how many shares they would sell at each price. The company then buys at the lowest price that meets the desired quantity
- targeted repurchase: through direct negotiation with a major shareholder

Payout policy

In a perfect capital market (the setting of Modigliani-Miller):

- when a dividend is paid, the share price drops by the amount of the dividend when the stock begins to trade ex-dividend.
- an open market share repurchase has no effect on the stock price, and the stock price is the same as the cum-dividend price if a dividend were paid instead (because the number of outstanding shares decreases, and so the future per-share dividends will be higher)
- investors are indifferent between the firm distributing funds via dividends or share repurchases. By reinvesting dividends or selling shares, they can replicate either payout method on their own.

Payout policy

MM Dividend Irrelevance: in perfect capital markets, holding fixed the investment policy of a firm, the firm's choice of dividend policy is irrelevant and does not affect the initial share price.

In a realistic setting, however, managers need to consider the fiscal effects of the dividend policy, as well as the possible **signalling effect of dividends**.

Paying dividends might be perceived by investors as an indicator of positive performance of the firm, which would increase the value of the company.

Therefore, various aspects need to be balanced when deciding the dividend policy.

Adjusted stock returns

Regardless of their possible impact on the value of the firm, corporate actions like those following from the payout policy can greatly impact the nominal share prices.

The two events that mostly affect the unadjusted share prices are dividend payments and stock splits.

Adjusted stock returns

When **dividends** are paid, all else equal, the price of the shares decreases by an amount equal to the dividend.

After a dividend payment, unadjusted returns register a loss that is not real, as we are fully compensated for the decrease in the price by receiving an equal amount of wealth in form of dividend.

We adjust the return by summing to the share price the dividend Div_t paid at time t:

$$R_t = \frac{P_t + Div_t - P_{t-1}}{P_{t-1}}$$

Adjusted stock returns

A **stock split** is a corporate action in which a company increases the number of shares without changing its market capitalization.

For example, a 2 for 1 split involves giving to every shareholder 2 shares for each share owned before the split.

A **reverse stock split** is the opposite of a stock split, i.e., it consists in reducing the number of shares with no change in the market capitalization.

For example, a 1 for 2 split means that every shareholder will end up with half the stocks owned before the split.

Adjusted stock returns

Splits can be accounted for by dividing the stock prices before the split by the **split ratio**. So, for example:

- in the case of a 2 for 1 stock split, the split ratio is 2. The prices up to the period before the one in which the split happened must be divided by 2.
- In the case of a 1 for 2 reverse stock split, the split ratio is ½. The prices up to the period before the one in which the split happened must be divided by ½ (i.e., they must be multiplied by 2).

This avoids a fictitious -50% return in the former case, and a fictitious +100% return in the latter.

Adjusted stock returns

The split ratio does not need to be an integer. A company might perform a 1.5 for 1 split, for example.

Companies perform stock splits when the management believes that the price of the shares is too high or too low.

If in an unadjusted series of prices both a dividend payment and a stock split happen, the amount of the dividend also has to be divided by the split ratio.

You must always use **adjusted returns** when working with stock returns, otherwise large errors might happen.