I. Capital Structure (definitions)

II. MM without Taxes (1958)

III. MM with Taxes (1963)

IV. Financial Distress

V. Business Risk

VI. Financial Risk

**Capital Structure Theory**

**Capital Structure** (def) - The structure of a firm's long-term (capital) financing. How a firm buys its long-term assets [debt, preferred stock, common stock (retained earnings, new common stock)]

**Leverage** (def) - The financing of any portion of assets with money raised from debt. The degree of leverage is the degree that asset purchases are financed with debt.

\[ V_U = \text{Value of an unlevered (U) firm (no debt)} \]

\[ V_L = \text{Value of an levered (L) firm (has debt)} \]

**MM without Taxes (1958)**

**Proposition I:**

\[ V_L = V_U = \frac{EBIT}{WACC} \]

says: (1) the value of a firm is independent of leverage

**Proposition II:**

\[ r_{ul} = r_{uU} + \text{risk premium} \]

where risk premium = \((r_{uU} - r_d) \times (D/S)\)

(added return necessary for equity above debt due to risk) \times \text{(proportion of debt to equity)}
MM with Taxes (1963)

**Proposition I:**

\[ V_L = V_U + tD \]

says: (1) value of a levered firm equals the value of an unlevered firm plus the tax savings associated with leverage

tax savings results from tax shield benefit

**The tax shield benefit can be quantified.**

\[ PV \text{ of tax shield} = \frac{D(r_d)(t)}{r_d} = tD \]

where, \( D = \) total amount of debt and \( t = \) tax rate

**Proposition II:**

\[ r_{sl} = r_{sU} + \text{risk premium} \]

where risk premium = \((r_{sU} - r_d)*(D/S)*(1-t)\)

note: difference between no tax case and tax case is \((1-t)\)

since if \( t > 0 \) \((1 - t)\) will be \(< 1\) the consideration of taxes causes \( r_{sl} \) to rise slower than in the no tax case and therefore \( V_L > V_U \)

**Consideration of financial distress**

financial distress = troubles faced by a company caused by inadequate cash flows that place costly restriction on firm

costs associated with financial distress include the following:

1. liquidation of assets at cost less than value to company as going concern
2. court costs and lawyers fees associated with bankruptcy, liquidation, or even negotiations to avoid bankruptcy
3. operating firm at bare bones - delay maintenance, repairs, and purchases; loss of valued employees; delay profitable investments, etc.
\[ V_L = V_U + \text{PV of tax shield} - \text{PV of financial distress} \]

According to the static theory, the gain from the tax shield on debt is offset by financial distress costs. An optimal capital structure exists that just balances the additional gain from leverage against the added financial distress cost.

However, additional debt brings potential of financial distress.

At low levels of debt PV of financial distress is very low and benefits of the tax shield outweighs.

At high levels of debt the PV of financial distress more than offsets the tax shield benefits.

Remember: more debt equates to more risk!

So, how much debt should a company carry.

Trade-off between tax shield benefits and financial distress costs

Point of optimal capital structure differs across firms. The amount of additional risk a firm can take on by adding debt depends on how much risk they already possess through their normal operations.
Our problem: Risk is difficult to quantify.

Let's measure risk from a company's point of view.

(1) Business Risk = risk from the cash flows
(2) Financial Risk = risk from taking on debt

Business Risk

Measure with variation with ROA

\[
\text{ROA} = \frac{\text{net income before interest}}{\text{total assets}}
\]

factors that affect ROA
(1) sales variability
(2) price variability
(3) raw material price variability
(4) fixed cost variability

Financial Risk - Additional risk to cash flows from adding debt (fixed interest cost).

Total Risk - The sum of Business Risk and Financial Risk
Chapter 15
Sharing Firm Wealth: Dividends, Share Repurchases, and Other Payouts

Net Income
(1) Payout as Dividends
(2) Retained Earnings

Does investor (owner) prefer dividends or retained earnings?

<table>
<thead>
<tr>
<th>Dividends</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tr>
<td></td>
<td>(1) spendable money</td>
<td>(1) taxes</td>
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<td></td>
<td>(2) no risk to cash</td>
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<tr>
<th>Retained Earnings</th>
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<td></td>
<td>(1) if +NPV projects</td>
<td>(1) if -NPV projects</td>
</tr>
<tr>
<td></td>
<td>(2) defer taxes</td>
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Dividend Theories

(1) **Dividend Irrelevance Theory** - payout of dividends has no effect on firm value or cost of capital. Therefore, does not matter whether firms pays or does not pay dividends.

(2) **Bird-in-the-Hand Theory** - since dividends (cash) is more certain than future gain investors will demand higher returns from non-dividend paying stocks. (Dividend paying stocks more valuable)

(3) **Tax Preference Theory** - since dividends are subject to immediate taxation investors will demand higher returns for dividend paying stocks. (Non-dividend paying stocks more valuable)

What to think?????

Some investors are in low or zero tax brackets and prefer income from investments. They prefer dividend paying stocks.

Some investors are in high tax brackets and desire to shelter income until future. They prefer non-dividend paying stock (capital gains)

Referred to as **Clientele Theory** - All different types of stock payouts attract all different types of investors.
Then why does stock price move with dividend announcements??????

**Signaling Theory** - Investors react only to unexpected dividend announcements. For example, if company announces increase in dividend, market perceives this as a signal that management thinks earnings will increase in the future.

strong signal because binding signal

**Dividend Policy in Practice**

(1) **Residual Dividend Policy** - Payout what a firm does not need. Needs for +NPV projects and variability in future CFs.

(2) Do not reduce dividends unless absolutely necessary.

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**Payment Process**

typically paid quarterly  ex - SWX  \( D_1 = \$0.95 \)

**Declaration date** - (4/12/10) Board of Directors issue statement declaring quarterly dividend - gives dividend payment date.

ex - SWX  \( P_0 =$28.24, D_1 =$0.2375, \)

payment date [4/26/10]

**Holder-of-record date** - 4/19/10 - whoever holds SWX stock on this date (according to registrar) gets dividend on 4/26/10.

**Ex-dividend date** - Two business days prior to Holder-of-record date - 4/17/10. Note you must buy by 4/16/10 or before to get dividend (takes 2 days for the registrar to record)  \( P_0 =$28.0025 \)

**Payment date** - 4/26/10

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**Terms:**

**Dividend Reinvestment Plan** - where stockholders can choose to automatically reinvest dividends instead of receiving.

**Stock Split** - receive a multiple number of shares for each one you own;  ex. 4 for 1

100 shares of BRK.A at $100,090.00 each = $10,009,000

400 shares of BRK.A at $25,022.50 each = $10,009,000

**Stock Dividend** - a small split 1.2 for 1 or below;

ex. 5% stock dividend

100 shares of IBM at $130.00 each = $13,000

105 shares of IBM at $123.81 each = $13,000
Stock Repurchase

Company buys back its own shares of stock.

1. Tender offer – company states a purchase price and a desired number of shares.
2. Open market – buys stock in the open market.

Similar to a cash dividend in that it returns cash from the firm to the stockholders.

However, a stock repurchase allows investors to decide if they want the current cash flow and associated tax consequences.

Stock repurchases - positive signal.

Stock Repurchase - example

“America West Airlines announced that its Board of Directors has authorized the purchase of up to 2.5 million shares of its Class B common stock on the open market as circumstances warrant over the next two years …

“Following the approval of the stock repurchase program by the company’s Board of Directors earlier today, W. A. Franke, chairman and chief officer said ‘The stock repurchase program reflects our belief that America West stock may be an attractive investment opportunity for the Company, and it underscores our commitment to enhancing long-term shareholder value.’

“The shares will be repurchased with cash on hand, but only if and to the extent the Company holds unrestricted cash in excess of $200 million to ensure that an adequate level of cash and cash equivalents is maintained.”