Dividend Policy

Gitman and Hennessey Chapter 11

Spring 2004

Outline

11.1 Dividend Fundamentals

11.2 The Relevance of Dividend Policy

11.3 Factors Affecting Dividend Policy

11.4 Types of Dividend Policies

11.5 Other Forms of Corporate Distribution

Dividend Fundamentals

Dividends are usually paid in cash.

Dividends are normally paid quarterly and, if conditions permit, increased once a year.

Suppose for example that a corporation paid $0.50 per quarter in 2003. Its annual dividend is then $2.00.

Dividend Fundamentals

The procedure for paying dividends is as follows:

Declaration Date: Date at which the company announces it will pay a dividend.

Holder-of-Record Date: Date at which the list of shareholders who will receive the dividend is made.

Ex-Dividend Date: The convention is that the right to the dividend remains with the stock until two business days before the holder-of-record date. Whoever buys the stock on or after the ex-dividend date does not receive the dividend.

Example

Declaration Date: On May 7, 2004, Sun Rype Products announced it will pay a quarterly dividend of $0.03 per share. The payment will be made on June 15, 2004.

Holder-of-Record Date: The dividend will be paid to shareholders on record at close of business on May 31, 2004.

Ex-Dividend Date: May 31 was a Monday so the ex-dividend date in this example is May 27, 2004.

May 7	Declaration date
May 26	Dividend goes with the stock
May 27	Ex-dividend date
May 31	Holder-of-record date
June 15	Payment date

Fall in Stock Price on the Ex-Dividend Date

$\tilde{p}_0 \equiv$ stock price one day before the ex-dividend date

$p_0 \equiv$ stock price on ex-dividend date $(t = 0)$

$$p_0 = \sum_{t=1}^{\infty} \frac{d_t}{(1+r_s)^t}$$

$$\tilde{p}_0 = p_0 + d_0 \quad \Rightarrow \quad \tilde{p}_0 - p_0 = d_0.$$

Without taxes, the stock price should fall by d_0 on the ex-dividend date.

Dividend Reinvestment Plans (DRIPs)

Many companies offer DRIPs, whereby shareholders can use the dividend received to purchase additional shares (even fractional) of the company without brokerage cost.

Many companies that offer DRIPs also offer share repurchase plans (SPP), which allow shareholders to make optional cash contributions that are eventually used to purchase shares.

Relevance of Dividend Policy

The Residual Theory of Dividends

One school of thoughts, the residual theory of dividends, suggests that the dividend paid bya firm be viewed as a residual, i.e. the amount leftover after all acceptable investment opportunities have been undertaken.

Relevance of Dividend Policy

The Residual Theory of Dividends

Using this approach, the dividend decision is done in three steps:

1. Determine the optimal level of capital expenditures;

2. Estimate the total amount of equity financing needed to support the expenditures;

3. Use reinvested profits to meet the equity requirement. If the available reinvested profits are in excess of the equity need, then the surplus, the residual, is distributed to shareholders as dividends.

Relevance of Dividend Policy

The Residual Theory of Dividends

Under the residual dividend model, dividends are determined as follows:

$$\text{Dividends} = \text{Net Income} - \text{Target Equity Ratio} \times \text{Capital Needed}$$

Relevance of Dividend Policy

The Residual Theory of Dividends

Suppose a firm has a target equity ratio of 60% and needs to spend \$50m on new projects.

The firm needs $.6 \times 50 = \$30m$ in equity.

If its net income is \$100m, its dividend will be

$$100 - 30 = \$70m.$$

If capital requirements were \$200m, the firm would not pay any dividend.

The Residual Theory of Dividends

Under the residual dividend model, the better the firm's investment opportunities, the lower the dividend paid.

Following the residual dividend policy rigidly would lead to fluctuating dividends, something investors don't like.

The Residual Theory of Dividends

To satisfy shareholders' taste for stable dividends, firms should

1. Estimate earnings and investment opportunities, on average over the next five to ten years;

2. Use this information to find out the average residual payout ratio;

3. Set a target payout ratio.

Relevance of Dividend Policy

Dividend Irrelevance Arguments

XYZ, an all-equity firm has 100 shares outstanding and a cash flow of $10,000 (including liquidation) over the next two years. The firm can then pay a dividend of $100 per shares in each of these two periods, which gives a stock price

$$p_0 = \frac{d_1}{1+r_s} + \frac{d_2}{(1+r_s)^2} = \frac{100}{1.10} + \frac{100}{(1.10)^2} = \$173.55$$

where $r_s = 10\%$ is the return required by shareholders (XYZ's cost of capital when an all-equity firm).

Dividend Irrelevance Theory

Suppose that XYZ wants to change its dividend policy. Instead of paying $100 per year to each shareholder, it will pay $120 per share the first year and whatever remains after liquidation of the firm on the second year.

To finance the greater dividend, XYZ has to either raise debt or equity.

Dividend Irrelevance Theory

Equity Is Issued

If equity is issued new shares have to be issued in exchange of $100 \times 20 = \$2,000$ after one year.

There is no increase in leverage and thus the new shareholders will also require a return of 10%, i.e. a payment of \$2,200 at the end of the second year.

This means that there will be $10,000 - 2,200 = \$7,800$ available to the old shareholders at time 2.

Dividend Irrelevance Theory

Equity Is Issued

The new stock price is then

$$p_0' = \frac{120}{1.10} + \frac{78}{(1.10)^2} = \$173.55,$$

i.e. it has not changed.

Dividend Irrelevance Theory

Equity Is Issued

More generally, consider a firm with n_0 shares outstanding and for which the stock price is

$$p_0 = \frac{d_1}{1+r_s} + \frac{d_2}{(1+r_s)^2} + \frac{p_2}{(1+r_s)^2}.$$

Suppose that instead of paying d_1 in period 1, the firm decides to issue equity and pay a dividend of $d_1 + x$.

Dividend Irrelevance Theory

Equity Is Issued

There is no change in leverage and thus shareholders' required return remains the same, which means that the new shareholders will receive

$$(1+r_s)n_0 x$$

in period 2. Hence the period 2 dividend will be

$$d_2' = d_2 - \frac{(1+r_s)n_0 x}{n_0} = d_2 - (1+r_s)x.$$

Equity Is Issued

Following this decision, the firm's stock price is

$$
\begin{aligned}
p_0' &= \frac{d_1 + x}{1 + r_s} + \frac{d_2 - (1 + r_s)x}{(1 + r_s)^2} + \frac{p_2}{(1 + r_s)^2} \\
&= \frac{d_1}{1 + r_s} + \frac{x}{1 + r_s} + \frac{d_2}{(1 + r_s)^2} - \frac{x}{1 + r_s} + \frac{p_2}{(1 + r_s)^2} \\
&= \frac{d_1}{1 + r_s} + \frac{d_2}{(1 + r_s)^2} + \frac{p_2}{(1 + r_s)^2} \\
&= p_0.
\end{aligned}
$$

Debt Is Issued

If debt is issued to change the stream of dividend payments, then interest payments will have to be made in the future.

According to M&M Proposition I, this change in capital structure does not affect the value of the firm as a whole.

Debt Is Issued

Let V represent the value of the firm without debt (the base case).

The firm's stock price is then initially

$$p_0 = \frac{V}{n_0},$$

which must also be equal to the present value of the dividends.

Dividend Irrelevance Theory

Debt Is Issued

Suppose the firm sells debt to finance an extra dividend of value x that will be paid to each shareholders at time 0.

The firm's assets remain unchanged and thus its cash flow from assets also remains the same.

The value of debt in period 0 is $D = n_0 x$, the value of the firm is V, as before, and the value of equity is

$$E = V - D = V - n_0 x.$$

Debt Is Issued

The value of the stock before the ex-dividend date is then

$$p_0' = \frac{V - n_0 x}{n_0} + x = \frac{V}{n_0} - x + x = \frac{V}{n_0} = p_0.$$

Note that we have assumed

- No taxes, no brokerage fees

- Individuals have homogeneous beliefs

- Investment policy is not affected by the dividend policy

Dividend Irrelevance Theory

Homemade Dividends

Another argument in favour of the dividend irrelevance theory is that an investor not satisfied with the proposed stream of dividends can always create her own personalized stream of income by borrowing or lending.

Dividend Irrelevance Theory

Homemade Dividends

Consider a stock such that

$$p_0 = \frac{d_1}{1+r_s} + \frac{d_2}{(1+r_s)^2} + \frac{p_2}{(1+r_s)^2}$$

and suppose one of the stockholder would like to have no dividend in period 1 and a greater dividend in period 2.

Dividend Irrelevance Theory

Homemade Dividends

The dividend d_1 will then be saved at the rate r_s, i.e. in an asset with the same risk-return characteristics, and the value of the stockholder's portfolio will be

$$\frac{d_2 + (1+r_s)d_1}{(1+r_s)^2} + \frac{p_2}{(1+r_s)^2} = \frac{d_1}{1+r_s} + \frac{d_2}{(1+r_s)^2} + \frac{p_2}{(1+r_s)^2} = p_0$$

and thus his valuation of the stock will be the same whether or not he likes the way dividends are paid.

Dividend Relevance Theory

Bird-in-the-Hand Argument

Myron Gordon and John Lintner have argued that shareholders are generally risk averse and prefers a dividend today to the promise of the greater dividend in the future.

Hence shareholder's required return is affected by a change in the dividend policy: Reducing today's dividend to invest in the firm at the initial required rate of return destroys value if shareholders' required rate of return increases due to this decision.

Taxes Preference Theory

Dividends have greater tax consequences than capital gains.

Investors in high tax brackets may prefer capital gains, and thus a low payout ratio, to dividends.

Also, taxes on capital gains are paid only when the stock is sold, which means that they can be deferred indefinitely.

Other Dividend Policy Issues

Signaling Hypothesis

The M&M dividend irrelevance theory assumes that all investors have the same information regarding the firm's future earnings.

In reality, however, different investors have different beliefs and some individuals have more information than others.

More specifically, the firm managers have better information about future earnings than outside investors.

Signaling Hypothesis

It has been observed that dividend increases are often accompanied by an increase in the stock price and dividend decreases are often accompanied by stock price declines.

These facts can be interpreted in two different ways:

- Investors prefer dividends to capital gains;

- Unexpected dividend increases can be seen as signals of the quality of future earnings (signaling theory).

33

Clientele Effect

Different groups (clienteles) of stockholders prefer different dividend policies.

This may be due to the tax treatment of dividends or because some investors are seeking cash income while others want growth.

Changing the dividend policy may force some stockholders to sell their shares.

34

Factors Affecting the Dividend Policy

- Legal Constraints

- Contractual Constraints

- Internal Constraints

- Growth Prospects

Types of Dividend Policies

Constant-Payout-Ratio Dividend Policy: The firm always pays a constant fraction of its earnings as dividends. The payout ratio is equal to one minus the retention ratio.

Regular Dividend Policy: Fixed-dollar dividend each period.

Low-Regular-and-Extra Dividend Policy: A regular dividend is promised each period but shareholders may receive more if earnings permit.

Dividend Policy and Growth Rate

Let

$$b \;\equiv\; \text{retention ratio,}$$

$$r \;\equiv\; \text{rate of return earned, on average, on new investments,}$$

$$I_t \;\equiv\; \text{new investments at time } t,$$

$$E_t \;\equiv\; \text{earnings at time } t.$$

Dividend Policy and Growth Rate

Then

$$I_t \;=\; bE_t, \qquad D_t \;=\; E_t \,-\, I_t \;=\; E_t \,-\, bE_t \;=\; (1-b)E_t$$

and

$$E_{t+1} \;=\; E_t \,+\, rI_t \;=\; E_t \,+\, rbE_t \;=\; (1+rb)E_t.$$

Dividend Policy and Growth Rate

The growth rate in dividends is then

$$
\begin{aligned}
g &= \frac{D_{t+1} - D_t}{D_t} = \frac{(1-b)E_{t+1} - (1-b)E_t}{(1-b)E_t} \\
&= \frac{E_{t+1} - E_t}{E_t} \\
&= \frac{(1+rb)E_t - E_t}{E_t} \\
&= rb.
\end{aligned}
$$

Dividend Policy and Growth Rate

Note that r can be approximated by the firm's return on equity (ROE) and thus the growth rate in dividends can be approximated by

$$\text{Return on Equity (ROE)} \times \text{Retention Ratio}.$$

Other Forms of Corporate Distribution

Stock Dividends and Stock Splits

These types of dividends do not increase the value of what shareholders own.

In the case of a stock dividend, each shareholder becomes the owner of more shares which are worth less.

In the case of a stock split, each shareholder also ends up with more shares which are worth less.

Other Forms of Corporate Distribution

Example of a Stock Dividend

Consider a company with 100,000 shares outstanding that declares a 10% stock dividend. That is, the company with give one tenth of a share for each an investor holds.

If Mulan, for example, owns 100 shares of that company, she will receive 10 shares.

Example of a Stock Dividend

From an accounting perspective, the company will issue 10,000 shares at the current stock price. Suppose the current stock price is $22.

If the initial balance sheet was

Common stock (100,000 shares)	900,000
Retained Earnings	800,000
Total Equity	1,700,000

Example of a Stock Dividend

the new balance sheet will be

Common stock (110,000 shares)	1,120,000
Retained Earnings	580,000
Total Equity	1,700,000

Example of a Stock Dividend

From shareholders' viewpoint, there is no change in value.

If the initial price is $22, the stock price after a 10% stock dividend is

$$\frac{22}{1.1} = \$20.$$

Example of a Stock Dividend

Before the stock dividend, the value of 100 shares is $2,200.

Aftre the stock dividend, the value of 110 shares is $2,200.

Example of a Stock Split

From shareholders' perspective, a stock split has the same effect as a stock dividend. From the firm's perspective, the change in the balance sheet will be different.

A three-for-two stock split, for example, corresponds to a 50% stock dividend.

A 10% stock dividend is then equivalent to a eleven-for-ten stock split.

Example of a Stock Split

With an 11-for-10 stock split, the new balance sheet would be

Common stock (110,000 shares)	900,000
Retained Earnings	800,000
Total Equity	1,700,000

Other Forms of Corporate Distribution

Share Repurchases

Advantages:

- Repurchase announcements are viewed as positive signals by investors.

- Stockholders have a choice when a firm repurchases stocks: They can sell or not sell.

- Dividends are sticky in the short-run because reducing them may negatively affect the stock price. Extra cash may then be distributed through stock repurchases.

Other Forms of Corporate Distribution

Share Repurchases

Disadvantages:

- Stockholders may not be indifferent between dividends and capital gains.

- The selling stockholders may not be fully aware of all the implications of a repurchase.

- The corporation may pay too much for the repurchased stocks.

Repurchases of Shares (vs Dividend Payment)

The day before a dividend payment, the price of a stock is

$$\tilde{p}_0 = d_0 + \sum_{t=1}^{\infty} \frac{d_t}{(1+r_s)^t} = d_0 + \sum_{t=1}^{\infty} \frac{CF_t/n_0}{(1+r_s)^t}$$

where CF_t is the cash flow net of debt payments at time t and n_0 is the initial number of shares.

Suppose that instead of paying d_0, the firm decides to repurchase n' shares.

Repurchases of Shares (vs Dividend Payment)

Anybody left with a share will receive

$$\sum_{t=1}^{\infty} \frac{CF_t/(n_0 - n')}{(1+r_s)^t} = \tilde{p}_0'$$

The firm uses dividend money to repurchase the shares, and thus n' is such that

$$n'\tilde{p}_0' = n_0 d_0$$

Repurchases of Shares vs Dividend Payment

This gives us

$$
\begin{aligned}
\tilde{p}_0' &= \sum_{t=1}^{\infty} \frac{CF_t/(n_0 - n')}{(1+r_s)^t} \\
&= \frac{n_0}{n_0 - n'} \times \sum_{t=1}^{\infty} \frac{CF_t/n_0}{(1+r_s)^t} \\
&= \frac{n_0}{n_0 - n_0 d_0/\tilde{p}_0'} \times \sum_{t=1}^{\infty} \frac{CF_t/n_0}{(1+r_s)^t} \\
&= \frac{1}{1 - d_0/\tilde{p}_0'} \times \sum_{t=1}^{\infty} \frac{CF_t/n_0}{(1+r_s)^t}
\end{aligned}
$$

Repurchases of Shares vs Dividend Payment

$$
\begin{aligned}
\tilde{p}_0' &= \frac{1}{1 - d_0/\tilde{p}_0'} \times \sum_{t=1}^{\infty} \frac{CF_t/n_0}{(1+r_s)^t} \\
\tilde{p}_0' - \tilde{p}_0' \times \frac{d_0}{\tilde{p}_0'} &= \sum_{t=1}^{\infty} \frac{CF_t/n_0}{(1+r_s)^t} \\
\tilde{p}_0' &= d_0 + \sum_{t=1}^{\infty} \frac{CF_t/n_0}{(1+r_s)^t} = \tilde{p}_0.
\end{aligned}
$$