# LM01 Analysis of Dividends and Share Repurchases

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# 1. Dividends: Forms and Effects on Shareholder Wealth and Financial Ratios

This learning module covers:

- Different forms of dividends and their effects on shareholder's wealth and a company's financial ratios
- Different theories of the effects of dividend policy on company value
- Factors that affect dividend policy
- Major types of dividend payout policies
- Share repurchases
- Global trends in payout policies
- Analysis of dividend safety

## 1.1 Dividends: Forms and Effects on Shareholder Wealth and the Issuing Company's Financial Ratios

A company can pay dividends in several ways. This section discusses the different forms of dividends and their impact on both the shareholder and the issuing company.

**Regular Cash Dividends**

Many companies distribute cash to their shareholders on a regular schedule, such as quarterly, semiannually, or annually. These payments are called regular cash dividends.

Generally, dividend-paying companies strive to maintain or increase their dividends. Consistent dividend payments over long time periods indicate consistent profitability. An increase in regular dividends indicates that the company is growing and is willing to share profits.

Dividend Reinvestment Plans

Some companies offer dividend reinvestment plans (DRPs, also known as DRIPs). A DRP allows shareholders to automatically reinvest all or a portion of cash dividends from a company in additional shares of the company. Three types of DRPs are:

- Open market DRP: The company purchases additional shares from the open market.
- New-issue DRP: The company meets the need of additional shares by issuing new shares instead of purchasing them.
- Plans that are allowed to obtain shares through either open-market purchases or new share issuance.

The advantages of DRPs are:

- They allow small shareholders an effortless means to accumulate additional shares.
- They encourage long-term investment in the company, because shareholders may value the ability to acquire additional shares.

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- New-issue DRPs allow companies to raise new capital without incurring the flotation costs associated with secondary offerings.
- DRPs allow shareholders to acquire new shares using cost averaging.
- There are no transaction costs involved in acquiring new shares through DRPs.

The disadvantages of DRPs are:

- Shareholders need to keep additional records, as DRPs can alter the cost basis of their investments and can result in higher or lower capital gains for tax purposes.
- Although cash dividends are reinvested, they still get fully taxed in the year in which they are declared, which means the shareholder is paying tax on cash that is not in hand.

**Extra or Special (Irregular) Dividends**

An extra or special dividend is a dividend paid by a company that does not normally pay dividends or a payment to shareholders that supplements regular cash dividends. Cyclical companies often use extra dividends to distribute cash to their shareholders only when their earnings are strong. During economic downturns, the extra dividends are not paid and cash is conserved.

*Dividend policy* refers to decisions about whether, when, and in what amount to pay dividends.

*Dividend payout ratio* refers to common share cash dividends divided by net income available to common shares over the same time period.

**Liquidating Dividends**

A liquidating dividend is a return of capital to shareholders. It is not a distribution from earnings.

A dividend is considered a liquidating dividend when a company:

- goes out of business, and the net assets of the company (after all liabilities have been paid) are distributed to shareholders;
- sells a portion of its business for cash, and the proceeds are distributed to shareholders; or
- pays a dividend that exceeds its accumulated retained earnings (impairs stated capital).

**Stock Dividends**

A stock dividend (also known as a bonus issue of shares) is where the company distributes additional shares to the shareholders instead of cash. The characteristics of stock dividends are:

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- Stock dividends do not affect the total market value of a company. The increase in the number of shares outstanding is exactly offset by a decrease in the share price.
- Stock dividends merely divide the pie (the market value of shareholders' equity) into smaller pieces. The shareholder has more shares, but each share is worth less. His total wealth is unchanged. Therefore, stock dividends are generally not taxable.
- The shareholder's proportionate ownership in the company is unchanged because other shareholders also receive the same proportionate increase in shares.
- Stock dividends result in a decrease in measures of value per share, such as earnings per share, because the company's earnings are not affected but its share base increases. However, the price-to-earnings ratio is unaffected because the share price declines as well following an increase in the number of shares.

**Example:**
(*This is based on Exhibit 2 of the curriculum.*)

Consider an investor who has 10% ownership of a company worth $20 million. The company has 1 million shares outstanding and earnings = $1 million. The company announces a 3% stock dividend.

The effects of the stock dividend are shown in the table below.

| | *Before Dividend* | *After Dividend* |
|---|---|---|
| Shares outstanding | 1,000,000 | 1,030,000 |
| Earnings per share | $1.00 | $0.97 (1,000,000/1,030,000) |
| Stock price | $20.00 | $19.4175 (20 × 0.9709) |
| P/E | 20 | 20 |
| Total market value | $20 million | $20 million (1,030,000 × $19.4175) |
| Shares owned | 100,000 (10% × 1,000,000) | 103,000 (10% × 1,030,000) |
| Ownership value | $2,000,000 (100,000 × $20) | $2,000,000 (103,000 × $19.4175) |

A stock dividend increases a company's share float, which increases the liquidity of its shares and decreases share price volatility. Stock dividends are used to keep the share price in an optimal price range, which in turn attracts more investors.

Stock dividends are accounted for as a transfer of retained earnings to contributed capital; the total equity stays the same.

### Stock Splits

A stock split is where a company issues additional shares to shareholders in proportion to their current holdings. For example, a two-for-one stock split means that the company would issue one additional share for each share issued, so a shareholder owning 100 shares would then own 200.

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- Like stock dividends, stock splits do not have any economic effect on the company.
- From the shareholder's perspective, there is no change in the total value of one's shareholding as the share price gets adjusted downwards according to the additional number of shares issued.
- Total earnings remain the same, so earnings per share decrease. However, the P/E ratio and total equity market value remain unchanged.
- Dividends per share also decrease; hence, dividend yield remains the same.

The difference between a stock split and a stock dividend is that while a stock dividend represents a transfer from the company's reserves to its share capital, a stock split does not affect any of the balances in shareholder equity accounts. Stock splits are typically done to keep the stock price in a marketable range.

Another form of a stock split is a *reverse stock split***.** A reverse stock split is when the company reduces the number of shares outstanding with no effect on the company's total market value. For example, a one-for-two stock split means that the company will consolidate two shares into one share, so a shareholder owning 100 shares would then own 50. A company may go for a reverse stock split to increase share price to attract institutional investors who do not trade in stocks with very low prices.

Exhibit 3 from the curriculum illustrates the effect of a two-for-one split.

| | *Before Split* | *After Split* |
|---|---|---|
| Number of shares outstanding | 4 million | 8 million |
| Stock price | €40.00 | €20.00 (€40/2) |
| Earnings per share | €1.50 | €0.75 (€1.50/2) |
| Dividends per share | €0.50 | €0.25 (€0.50/2) |
| Dividend payout ratio | 1/3 | 1/3 |
| Dividend yield | 1.25% | 1.25% (€0.25/€20.00) |
| P/E | 26.7 | 26.7 (€20.00/€0.75) |
| Market value of equity | €160 million | €160 million (€20.00 × 8 million) |

**Impact of dividends on capital structure and ratios**

From the company's perspective, a contrast between stock and cash dividends is that a cash dividend affects a company's capital structure, whereas a stock dividend does not. A cash dividend reduces the company's assets and equity, hence increasing the share of debt in the capital structure. As a result, cash dividends result in an increase in leverage ratios. Cash dividends also decrease the liquidity ratios due to a reduction in cash. A stock dividend does not affect these ratios, as it only represents a transfer from the company's reserves to its share capital, leaving total equity unchanged.

The impact is summarized below:

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Cash dividends

- Assets and equity decrease.
- Capital structure changes.
- Leverage ratios increase.
- Liquidity ratios decline.

Stock dividends (and splits)

- Assets and equity stay the same.
- Capital structure does not change (simply divide the "pie" into smaller pieces).
- Leverage ratios unchanged.
- Liquidity ratios unchanged.

## 2. Dividend Policy and Company Value: Theories

### 2.1 Dividend Policy Does Not Matter

According to Modigliani and Miller (MM), if we assume perfect capital markets (i.e., there are no taxes, no transaction costs, and symmetric information), then dividend policy does not matter. It will have no impact on the cost of capital or on the company's value.

**Instructor's note**: In MM assumptions, there is no meaningful distinction between dividends and share repurchases. They are both ways for a company to return cash to shareholders.

Points supporting their argument are:

- A dividend decision is independent of the company's investment and financing decisions. For example, suppose that a company paid out its entire earnings as dividends. Then, to finance capital projects, it could issue new shares. The value of the newly issued shares would exactly offset the value of the dividend.
- Investors can generate homemade dividends. If investors want income, they can sell shares to create dividends.
- Similarly, if investors do not need income, they can use the dividends to purchase additional shares.

The implication of this theory is that company value is not impacted by the dividend policy; hence, this theory is also called the dividend irrelevance theory.

### 2.2 Dividend Policy Matters: The Bird in the Hand Argument

**Instructor's note**: This theory is based on the English proverb - A bird in hand is worth two in the bush.

This theory states that investors view a certain amount of cash dividends as less risky than the same amount in capital gains. Hence, companies that pay dividends have a lower cost of

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equity as compared to companies that do not pay dividends. The lower cost of equity results in a higher present value for the companies that pay dividends.

MM's counterargument: Whether or not a dividend is paid does not impact the riskiness of future cash flows; hence, the cost of equity should be the same under both cases.

### 2.3 Dividend Policy Matters: The Tax Argument

This theory states that investors do not like dividends because they are taxed higher than capital gains. Hence, they prefer companies that pay low dividends. This increases the value of companies with low dividend payout ratios.

## 3. Other Theoretical Issues: Signaling

### 3.1 The Information Content of Dividend Actions: Signaling

Usually there is some level of information asymmetry, i.e., managers/insiders know more than outside investors. Hence, the board/management may use dividends to signal how the company is really performing.

Dividend initiation or increase is generally seen as a positive signal, and stock prices will probably rise in the short run. However, if revised dividends are not sustainable, the stock price will fall.

A decrease in dividends or omission of dividends is generally seen as a negative signal, and the stock price will probably fall in the short run.

### 3.2 Agency Costs and Dividends as a Mechanism to Control Them

When agents (managers) and owners (shareholders) are different, managers have an incentive to maximize their own profit at the company's expense. This is called an agency cost. Agency costs can be high at large corporations.

A major concern for shareholders is that management might invest in negative NPV projects. Such projects may increase the size of the company and favorably impact the compensation package for managers. However, such projects will generate negative economic returns for shareholders. This potential overinvestment problem can be partially controlled through high dividend payouts. If most of the free cash flow is paid out, managers will not be able to invest in negative NPV projects.

There is one more concern when a company has both debt and equity in its capital structure. Paying dividends can exacerbate the agency conflict between shareholders and bondholders. Dividends reduce the cash cushion available for payments to bondholders. To avoid this problem, bond covenants usually have restrictions on the amount that can be paid out to shareholders during the life of the bond.

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## 4. Other Theoretical Issues: Summary

Because of the presence of market imperfections, it is difficult to show an exact relationship between dividend policy and the value of the company. Financial theory predicts that reinvestment opportunities should be the main factor in determining the dividend policy of a company.

It has been observed that smaller, fast-growing companies pay out little or no dividends. On the other hand, more mature companies with fewer reinvestment opportunities tend to pay dividends. For these mature companies, taxes, laws, tradition, signaling, ownership structure, and attempts to reconcile agency conflicts play a role in determining the dividend payout ratio.

While researching a company, an analyst should evaluate whether a given company's dividend policy matches its reinvestment opportunities, clientele preferences, and legal/financial environment.

## 5. Factors Affecting Dividend Policy in Practice

Six primary factors that affect a company's dividend policy are:

- Investment opportunities
- The expected volatility of future earnings
- Financial flexibility
- Tax considerations
- Flotation costs
- Contractual and legal restrictions

### 5.1 Investment Opportunities

All else equal, a company with many profitable investment opportunities will pay less dividends relative to a company with fewer opportunities. For example, young technology companies that have many investment opportunities usually pay little or no dividends. On the other hand, mature utility companies that have fewer investment opportunities usually pay high dividends.

### 5.2 The Expected Volatility of Future Earnings

All else equal, if earnings volatility is high, there is a risk that a given dividend increase may not be sustainable in the future. Thus, when earnings are volatile, companies are more cautious in the size and frequency of dividend increases.

### 5.3 Financial Flexibility

A company that has substantial cash on hand is in a relatively strong position to meet unforeseen operating needs and to exploit investment opportunities. To obtain such financial flexibility, companies may not initiate, or may reduce, or omit dividends.

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## 5.4 Tax Considerations

There are three main systems of taxation that impact dividends.

**Double taxation:**

Corporate earnings are taxed at the corporate level and then taxed again at the shareholder level if they are distributed to taxable shareholders as dividends. The effective tax rate is given by:

> Effective tax rate = Corporate tax rate + (1 – corporate tax rate) * (individual marginal tax rate on dividends)

Refer to Exhibit 4 from the curriculum for an example of a double taxation system. The individual tax rate on dividends in the US was reduced from a maximum of 39.6% to 15%. The effective tax rates for the before and after scenarios are shown in the table below.

| | **39.6%** | **15%** |
|---|---|---|
| Net income before taxes | $100 | $100 |
| Corporate tax rate | 35% | 35% |
| Net income after tax | $65 | $65 |
| Dividend assuming 100% payout | $65 | $65 |
| Shareholder tax on dividend | $25.74 | $9.75 |
| Net dividend to shareholder | $39.26 | $55.25 |
| Double tax rate on dividend distributions | 60.7% | 44.8% |

**Tax imputation system:**

Under this system, a company's earnings are first taxed at the corporate level. However, when the company distributes these earnings as dividends, the shareholders receive a tax credit for the taxes the company has already paid. If the shareholder's tax bracket is higher than the company's, he pays a difference between the two rates. If the shareholder's tax bracket is lower than the company's, he receives a tax credit equal to the difference between the two rates.

Exhibit 5 from the curriculum illustrates this concept. The company's tax rate is 30%. One shareholder has a marginal tax rate of 15%, and the other shareholder has a marginal tax rate of 47%.

| | **Marginal shareholder Tax Rate** | |
|---|---|---|
| | **15%** | **47%** |
| Pretax income | $100 | $100 |
| Taxes at 30% corporate tax rate | 30 | 30 |
| Net income after tax | 70 | 70 |

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| | | |
|---|---|---|
| Dividend assuming 100% payout | 70 | 70 |
| Shareholder tax on pre-tax income | 15 | 47 |
| Less tax credit for corporate payment | 30 | 30 |
| Tax due from shareholder | (15) | 17 |
| Effective tax rate on dividend | 15/100 = 15% | 47/100 = 47% |

Thus, taxes on dividends are effectively levied only at the shareholder level, and corporate profits that are distributed as dividends are only taxed once.

**Split-rate tax system:**

Under a split-rate tax system, corporate earnings that are distributed as dividends are taxed at a lower rate than earnings that will be retained. Earnings distributed as dividends are still taxed twice, but the comparatively low corporate tax rate on earnings lessens that penalty. Refer to exhibit 6 from the curriculum for an example of a split-rate tax system.

| | |
|---|---|
| Pretax earnings | €200 |
| Pretax earnings retained | 100 |
| 35% tax on retained earnings | 35 |
| Pretax earnings allocated to dividends | 100 |
| 20% tax on earnings allocated to dividends | 20 |
| Dividends distributed | 80 |
| Shareholder tax rate | 35% |
| After-tax dividend to shareholder | $[(1 - 0.35) * 80] = 52$ |
| Effective tax rate on dividend | $[20\% + (80 * 0.35)\%] = 48\%$ |

## 5.5 Flotation Costs

Flotation costs include:

1. The fees that the company pays to investment bankers, attorneys, securities regulators, auditors, and others to issue shares.
2. The possible adverse market price impact from a rise in the supply of shares outstanding.

Hence, it is more expensive for companies to raise new equity capital than to use their own retained earnings. As a result, many companies avoid establishing a level of dividends that would create a need to raise new equity capital.

## 5.6 Contractual and Legal Restrictions

Legal or contractual restrictions often affect the payment of dividends. For example, in Brazil, the distribution of dividends is legally mandated.

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Also, bondholders may impose restrictions on the amount of dividends that can be paid. These restrictions require the company to maintain certain ratios (interest coverage ratio, current ratio, etc.) or fulfill certain conditions before dividends are paid.

Similarly, if a company has issued preference shares, dividends on common shares cannot be paid until preference share dividends are paid.

## 6. Payout Policies

Dividend policy is a strategy that a company uses to determine the amount and timing of dividend payments. In this section, we will discuss two types of dividend policies:

- Stable dividend policy
- Constant dividend payout policy

### 6.1 Stable dividend policy

In this policy, dividends are based on a long-term forecast of sustainable earnings. Dividends are increased when earnings have increased to a sustainably higher level. Exhibit 7 from the curriculum shows the recent record of a company following a stable dividend policy.

| Year | EPS (€) | EPS (adjusted) | DPS (€) | Dividend Payout Ratio (%) | Dividend Payout Ratio Using Adjusted EPS (%) |
|---|---|---|---|---|---|
| 2008 | 0.68 | €3.01 | 1.50 | 221 | 50 |
| 2007 | 3.69 | €2.62 | 1.37 | 37 | 52 |
| 2006 | 2.82 | €2.22 | 1.12 | 40 | 50 |
| 2005 | 3.75 | €1.84 | 0.92 | 25 | 50 |
| 2004 | 2.20 | n/c | 0.78 | 35 | n/c |

As the example shows, dividends over the period were fairly stable, even while earnings, affected by restructuring costs, were considerably volatile.

A stable dividend policy can be modeled as a process of gradual adjustment towards a **'target payout ratio.'** Three basic aspects of this model are:

1. Many companies have a target payout ratio, based on long-term, sustainable earnings;
2. Managers are more concerned with dividend changes than with the level of the dividend; and
3. Companies will cut or eliminate a dividend only in extreme circumstances or as a last resort.

As per this model, the expected increase in dividend is given by:

(Expected earnings × Target payout ratio – Previous dividend) × Adjustment factor

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where: adjustment factor = 1/number of years over which the dividends are to be adjusted

**Example**
(*This is based on Example 10 from the curriculum.*)

The following information is provided about a company.

- Last year's earnings = $2.00 per share
- Last year's dividends = $0.40
- Current year anticipated earnings = $2.80
- Target payout ratio = 30%
- Adjustment period = 4 years

Compute the expected dividend for the current year.

**Solution:**

Expected dividend = Previous dividend + [(Expected earnings × Target payout ratio – Previous dividend) × Adjustment factor]

= $0.40 + [($2.80 × 0.3 – $0.40) × (1/4)]

= $0.40 + [($0.84 – $0.40) × (1/4)]

= $0.51 Dividend, a $0.11 increase.

### 6.2 Constant Dividend Payout Ratio Policy

In this policy, the company decides on a dividend payout ratio and then applies this ratio to current earnings to calculate the dividend amount. As a result, dividends fluctuate with earnings in the short term. This policy is seldom used in practice.

### 6.3 Global Trends in Payout Policy

The following broad trends have been observed in dividend payout policies:

- A lower percentage of companies in a given U.S. stock market index have paid dividends than have companies in a comparable European stock market index.
- The fraction of companies paying cash dividends has been in long-term decline in most developed markets (e.g., the United States, Canada, the European Union overall, the United Kingdom, and Japan).
- Since the early 1980s in the United States and the early 1990s in the United Kingdom and continental Europe, the fraction of companies engaging in share repurchases has trended upward.

## 7. Share Repurchases

A share repurchase (or buyback) is a transaction in which a company buys back its own shares. Share repurchases are an alternative to cash dividends, as they utilize the

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company's cash. Shares that are repurchased are not considered for dividends, voting, or calculating per-share measures. If the company intends to reissue the repurchased shares, then such shares are classified as **treasury shares**; otherwise, if the company does not intend to reissue such shares, then they are classified as **canceled**.

Share repurchases are different from cash dividends in that once they are authorized, the company is not bound to carry out the repurchases, whereas once a cash dividend is approved, the company is committed to pay the dividend. Another difference between cash dividends and share repurchases is that cash dividends distribute cash among shareholders in proportion to their shareholding, whereas in a share repurchase, cash is only distributed to those shareholders that sell their shares.

## 7.1 Share Repurchase Methods

There are four main ways that companies can repurchase shares, discussed in this section.

### Buy in the open market

This is the most common method of share repurchase, with the company buying its shares as per the conditions in the open market. It offers the company maximum flexibility, as there is no legal obligation to undertake or complete the repurchase program. This method can also be cost-effective if timed properly to minimize price impact and take advantage of market underpricing.

### Buy back a fixed number of shares at a fixed price

In this method, the company makes a 'fixed price tender offer' to repurchase a specific number of shares at a specific price, typically at a premium to market price. If shareholders offer a larger number of shares than the tender offer, the company will typically buy back on a pro rata basis. This method is quick but costly for the company.

### Dutch Auction

A Dutch auction is also a tender offer on a specified number of shares, but instead of specifying a fixed price, the company discovers the minimum price at which it can buy the specified number of shares and then pays that price to all qualifying bids.

For instance, if the company has to buy back 1 million shares and the market price is $20, it can offer to buy back the shares at a minimum price of $20. Shareholders would then indicate the number of shares they are willing to sell and the minimum price at which they are willing to sell. The company would then qualify the offers starting with the lowest price until the desired quantity is completed. If 1 million shares get completed at an offer price of, say, $23, then the company would buy the shares at $23 from all qualifying offers. The offers above $23 would be rejected.

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In terms of speed of execution and cost, this method will rank between the previous two methods. It is relatively quick but not as quick as a tender offer. The auction process is less costly than the fixed price offered in a tender offer.

**Repurchase by direct negotiation**

Under this method, the company may negotiate with a large shareholder to buy back its shares, usually at a premium to market price. The company may do this to avoid the market impact of transacting in a large quantity of shares.

## 7.2 Financial Statement Effects of Repurchases

Share repurchases affect both the balance sheet and the income statement.

- If repurchase is made with cash, both assets and equity decrease, causing an increase in leverage.
- Earnings per share can increase due to a lesser number of shares outstanding, depending on how and at what cost the repurchase is financed.

**Changes in Earnings per Share**

If net income remains unchanged, then a lower number of outstanding shares due to a share repurchase can result in higher earnings per share. However, the change in net income depends on how the repurchase is financed.

- If the share repurchase is financed internally, a repurchase increases EPS only if the funds used for the repurchase would not earn their cost of capital if retained by the company.
- If the repurchase is financed by taking external debt, the effect on EPS is positive if the earnings yield exceeds the after-tax cost of financing the repurchase. If the earnings yield is lower than the after-tax cost of financing, EPS would decrease.

**Example**

(*This is based on Example 13 from the curriculum.*)

The following information is provided about a company:

- Number of shares outstanding = 10 million
- Net income = ¥100 million
- Current share price = ¥120
- Surplus cash = ¥240 million (This is currently earning 0% interest.)

The company is planning to use the surplus cash for a share repurchase program. It estimates that the stock can be bought in the open market at a ¥20 premium to the current market price, or ¥140 a share.

Calculate the impact on EPS.

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**Solution**:

Current EPS = (¥100 million net income)/(10 million shares) = ¥10.00

After the share repurchase, net income is unchanged at ¥100 million.

Number of shares repurchased = (¥240,000,000/¥140) = 1.7 million shares. So, the number of shares outstanding reduces to: 10 million – 1.7 million = 8.3 million

New EPS = = (¥100 million net income)/(8.3 million shares) = ¥12.00

Thus, the EPS increases by 20% as a result of the share repurchase.

**Example**
(*This is based on Example 14 from the curriculum.)*

A company plans to borrow $12 million to pursue a share repurchase program. The following information is provided:

- Share price at time of share repurchase = $60
- Earnings after tax = $6.6 million
- EPS before share repurchase = $3
- Price/Earnings ratio (P/E) = $60/$3 = 20
- Earnings yield (E/P) = $3/$60 = 5%
- Shares outstanding = 2.2 million
- Planned share repurchase = 200,000 shares

1. Calculate the EPS after the share repurchase, assuming the after-tax cost of borrowing is 5%.
2. Calculate the EPS after the share repurchase, assuming the company's borrowing rate increases to 6% because of the increased financial risk.

**Solution to 1:**

EPS after buyback = (Earnings – After-tax cost of funds)/Shares outstanding after buyback
= [$6.6 million – ($12 million × 0.05)]/2 million shares
= [$6.6 million – ($0.6 million)]/2 million shares
= $6.0 million/2 million shares
= $3.00

With the after-tax cost of borrowing at 5%, the share repurchase has no effect on the company's EPS. Note that the stock's earnings yield, the ratio of earnings per share to share price, or E/P, was $3/$60 = 0.05, or 5%, equal to the after-tax cost of debt.

**Solution to 2:**

EPS after buyback = (Earnings – After-tax cost of funds)/Shares outstanding after buyback

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= [$6.6 million – ($12 million × 0.06)]/2 million shares
= [$6.6 million – ($0.72 million)]/2 million shares
= $5.88 million/2 million shares
= $2.94

Note that in this case, the after-tax cost of debt, 6%, is greater than the 5% earnings yield; therefore, the EPS reduces.

**Changes in Book Value per Share**

If the market price per share is higher than the book value per share, BVPS will decrease after the share repurchase. On the other hand, if the market price per share is lower than the book value per share, BVPS will increase after the share repurchase.

**Example**

Companies X and Y buy back 200,000 shares. The following information is provided about these companies.

Company X:

- Number of shares outstanding = 1 million
- Current market price per share = $20
- Book value of equity = $10 million

Company Y:

- Number of shares outstanding = 1 million
- Current market price per share = $20
- Book value of equity = $30 million

What is the impact on BVPS for the two companies?

**Solution**:

Company A:
BVPS before buyback = $10 million/1 million = $10
Number of shares repurchased = 200,000
Number of shares outstanding after buyback = 1,000,000 – 200,000 = 800,000
Book value after buyback = $10 million – 200,000 x 20 = $6 million
BVPS after buyback = $6 million/800,000 = 7.5

Since company A's stock price ($20) was higher than its original BVPS ($10), its BVPS decreased after the share repurchase.

Company B:
BVPS before buyback = $30 million/1 million = $30
Number of shares repurchased = 200,000

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Number of shares outstanding after buyback = 1,000,000 – 200,000 = 800,000
Book value after buyback = $30 million – 200,000 x 20 = $26 million
BVPS after buyback = $26 million / 800,000 = $32.5

Since company B's stock price ($20) was lower than its original BVPS ($30), its BVPS increased after the share repurchase.

## 8. Valuation Equivalence of Cash Dividends and Share Repurchase

Share repurchases and cash dividends have the same impact on shareholder wealth, assuming taxation and information content for both methods are the same.

A company should not expect to create or reduce shareholder wealth by the method of distribution it chooses. However, in the case of share repurchases, if the company purchases its shares from a specific group of shareholders at a price that is at a premium to the market price, the remaining shareholders will bear the impact of the premium and see their wealth reduced.

**Example:**

Company X has 1 million shares outstanding with a current market value of $10 per share. The company wants to give $2 million to shareholders. What is the impact on shareholder wealth of:

1. Paying an extra (irregular) dividend
2. Repurchasing $2 million worth of shares

**Solution to 1:**

Market value of equity before the distribution = $10 x 1 million shares = $10 million
Market value of equity after distribution = $10 million - $2 million = $8 million
Value of each share after the dividend = $8 million/1 million shares = $8
Dividend per share = $2 million/1 million shares = $2
Total wealth from ownership of one share = $8 + $2 = $10

**Solution to 2:**

Number of shares repurchased = $2 million/$10 = 0.2 million
Number of shares outstanding after the repurchase = 1 million – 0.2 million = 0.8 million
Market value of equity after share repurchase = $10 million - $2 million = $8 million
Value of each share after the repurchase = $8 million/0.8 = $10

Shareholders who participate in the repurchase program and sell their shares will receive $10 in cash per share from the company. Shareholders who do not participate in the repurchase program will have shares worth $10 each.

Thus, the total shareholder wealth in all cases is the same.

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## 9. The Dividend versus Share Repurchase Decision

Theoretically, share repurchases are equivalent to cash dividends of equal amount in their effect on shareholders' wealth, all other things being equal. However, all other things are not necessarily equal. Listed below are factors to consider when evaluating share repurchases.

- **Potential tax advantages**: If the tax on dividends is higher than the tax on capital gains, then share repurchases are preferred by investors. Even if the two tax rates are equal, the option to defer capital gains taxes—by deciding not to participate in the share repurchase—will be valuable to many investors.
- **Share price support/signaling that the company considers its shares a good investment**: A share repurchase program is often seen as a positive signal. It means that a company views its own shares as undervalued in the marketplace and hence a good investment.
- **Added managerial flexibility**: Unlike regular cash dividends, share repurchase programs do not create the expectation among investors of continuance in the future.
- **Offsetting dilution from employee stock options**: Some companies use share repurchases to offset the possible dilution of earnings per share that may result from the exercise of employee stock options.
- **Increasing financial leverage**: Share repurchases can be used to increase leverage in the company's capital structure. If the share repurchase is financed by issuing new debt, the leverage increases even faster. This is demonstrated in the following example.

**Example**
(*This is based on Example 18 from the curriculum.*)

A company with debt and a debt ratio of C$30 million and 30%, respectively, plans a share repurchase program involving C$7 million, or 10% of the market value of its common shares. What debt ratios would result from financing the repurchases using 1) cash on hand and 2) new debt?

**Solution to 1:**

Assuming nothing else changes, if the company uses cash on hand to make the share repurchase, the debt ratio would increase to 32% (C$30 million/C$93 million = 0.3226 or 32.3%).

**Solution to 2**:

Assuming nothing else changes, if the company uses debt to finance the share repurchase, the debt ratio would increase to 37% (C$37 million/C$100 million = 0.3700 or 37.0%).

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## 10. Analysis of Dividend Safety

In this section, we discuss how an analyst can predict if a company's cash dividend may be cut.

**Traditional approach:**

The traditional measure of dividend safety is the dividend payout ratio and its inverse, the dividend coverage ratio.

$$\text{Dividend payout ratio} = \frac{\text{Dividends}}{\text{Net Income}}$$

$$\text{Dividend coverage ratio} = \frac{\text{Net Income}}{\text{Dividends}}$$

A higher dividend payout ratio or a lower dividend coverage ratio tends to indicate, all else equal, a higher risk of a dividend cut. Large mature companies target coverage ratios of 1.7x to 2.5x. If the coverage ratio drops to 1x, this is a concern.

**Comprehensive approach:**

A more comprehensive measure of dividend safety is to use the FCFE coverage ratio.

$$\text{FCFE coverage ratio} = \frac{\text{FCFE}}{(\text{Dividends} + \text{Share repurchases})}$$

If this ratio is 1, the company is returning all available cash to its shareholders. If the ratio is significantly greater than 1, the company is building up its cash reserves. If the ratio is significantly less than 1, the company is paying out more than it is earning. This is not sustainable; it will deplete the cash reserves, and the company will have to raise new equity. Hence, a ratio of less than 1 suggests that a company will probably cut its dividend.

An analyst should assess coverage ratios relative to historical levels and peer companies. He should also look at the stage in the industry lifecycle the company is in while making his decision.

**Example**

(*This is based on Example 22 from the curriculum.*)

The following information is provided for a company:

| Years Ending 31 December (US$ millions) | **2012** | **2013** | **2014** | **2015** |
|---|---|---|---|---|
| Net income (earnings) | 2,079 | 1,785 | 1,536 | 1,270 |
| Cash flow from operations | 3,225 | 3,212 | 2,614 | 2,338 |
| FCInv (capital expenditures) | 2,133 | 1,624 | 1,138 | 1,217 |
| Net borrowing | (462) | (153) | 303 | (27) |
| Dividends paid | 467 | 997 | 1,141 | 1,204 |
| Stock repurchases | 0 | 411 | 1,065 | 0 |

1. Using the above information, calculate the following for 2012, 2013, 2014, and 2015:

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A. Dividend/earnings payout ratio
B. Earnings/dividend coverage ratio
C. Free cash flow to equity (FCFE)
D. FCFE/[dividend + stock repurchase] coverage ratio

2. Discuss the trends in earnings/dividend coverage and in FCFE/[dividend + stock repurchase] coverage.
3. Comment on the sustainability of the company's dividend and stock repurchase policy after 2014/2015.

**Solution to 1:**

| Years Ending 31 December | **2012** | **2013** | **2014** | **2015** |
|---|---|---|---|---|
| A. Dividend/earnings payout ratio | 22.5% | 55.9% | 74.3% | 94.8% |
| B. Earnings/dividend coverage ratio (x) | 4.45 | 1.79 | 1.35 | 1.05 |
| C. Free cash flow to equity (FCFE) (mil.) | 630 | 1,435 | 1,779 | 1,094 |
| D. FCFE/[div. + stock repurch.] cover. (x) | 1.35 | 1.02 | 0.81 | 0.91 |

Dividend/earnings payout = US$467/US$2,079 = 0.225, or 22.5%, in 2012, and so on.

Earnings/dividend coverage = US$2,079/US$467 = 4.45x in 2012 and so on.

FCFE = Cash flow from operations (CFO) – FCInv + Net borrowing = US$3,225 – US$2,133 + (US$462) = US$630 in 2012 and so on.

FCFE coverage of dividends + share repurchases = FCFE/[dividends + stock repurchases] = US$630/(US$467 + 0) = 1.35x in 2012 and so on.

**Solution to 2**:

The dividend coverage ratio has decreased significantly from 4.45x in 2012 to 1.05x in 2015. The FCFE coverage ratio has also decreased significantly from 1.35x in 2012 to 0.91x in 2015.

**Solution to 3:**

Given the decline in the ratios, the cash distributions look unsustainable, and the company will probably cut dividends and stop its share repurchase programs.

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## Summary

**LO: Describe the expected effect of regular cash dividends, extra dividends, liquidating dividends, stock dividends, stock splits, and reverse stock splits on shareholders' wealth and a company's financial ratios.**

Cash dividends are payments made to shareholders in cash. The three types of cash dividends are:

1. Regular cash dividends are paid out on a consistent basis. A stable or increasing dividend is viewed as a sign of financial stability.
2. Special dividends are one-time cash payments when the situations are favorable (also called extra dividends or irregular dividends; used by cyclical firms).
3. A liquidating dividend is distributed to shareholders when a company goes out of business.

Stock dividends are payments made to shareholders in additional shares instead of cash.

Stock splits divide each existing share into multiple shares.

Reverse stock splits are the opposite of stock splits, and they decrease the total number of outstanding shares.

Share repurchase is when a company buys back its own outstanding shares using cash.

The impact of cash dividends and stock dividends is summarized below:

Cash dividends

- Assets and equity decrease.
- Capital structure changes.
- Leverage ratios increase.
- Liquidity ratios decline.

Stock dividends (and splits)

- Assets and equity stay the same.
- Capital structure does not change (simply divide the "pie" into smaller pieces).
- Leverage ratios unchanged.
- Liquidity ratios unchanged.

**LO: Compare theories of dividend policy, and explain implications of each for share value given a description of a corporate dividend action;**

Dividend Policy Does Not Matter:
According to this theory, if we assume perfect capital markets (i.e., there are no taxes, no transaction costs, and symmetric information), then dividend policy does not matter. It will have no impact on the cost of capital or on the company's value.

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Dividend Policy Matters: The Bird in the Hand Argument:
This theory states that investors view cash dividends as less risky than the same amount of capital gains. Hence, companies that pay dividends have a lower cost of equity as compared to companies that do not pay dividends. The lower cost of equity results in a higher present value for companies that pay dividends.

Dividend Policy Matters: The Tax Argument:
This theory states that investors do not like dividends because dividends are taxed at a higher rate than capital gains. Hence, they prefer companies that pay low dividends. This increases the value of companies with low dividend payout ratios.

**LO: Describe types of information (signals) that dividend initiations, increases, decreases, and omissions may convey.**

Dividend initiation or increase is generally seen as a positive signal, and stock prices will probably rise in the short run. However, if revised dividends are not sustainable, the stock price will fall.

A decrease in dividends or omission of dividends is generally seen as a negative signal, and the stock price will probably fall in the short run.

**LO: Explain how agency costs may affect a company's payout policy.**

Agency costs and dividends:
A major concern to shareholders is that management might invest in negative NPV projects. Such projects may increase the size of the company and thus be better for managers, but they will generate negative economic returns. This potential overinvestment problem can be partially controlled through high dividend payouts. If most of the free cash flow is paid out, managers would be constrained in their ability to overinvest by undertaking negative NPV projects.

**LO: Explain factors that affect dividend policy in practice.**

Factors that affect dividend policy are:

- Investment opportunities: All else equal, a company with many profitable investment opportunities will pay out less dividends than a company with fewer opportunities.
- The expected volatility of future earnings: When earnings are volatile, companies are more cautious in the size and frequency of dividend increases.
- Financial flexibility: To obtain financial flexibility associated with holding more cash, companies may not initiate, or may reduce, or omit dividends.
- Tax considerations: Under double taxation systems, dividends are taxed at both the corporate and shareholder levels. Under tax imputation systems, a shareholder receives a credit on dividends for the tax paid on corporate profits. Under split-rate

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taxation systems, corporate profits are taxed at different rates depending on whether the profits are retained or paid out in dividends.

- Flotation costs: It is more expensive for companies to raise new equity capital than to use their own retained earnings. As a result, many companies avoid establishing a level of dividends that would create a need to raise new equity capital in the future.
- Contractual and legal restrictions: Often the payment of dividends is affected by legal or contractual restrictions or rules.

**LO: Calculate and interpret the effective tax rate on a given currency unit of corporate earnings under double taxation, dividend imputation, and split-rate tax systems.**

Double taxation:
Under double taxation systems, dividends are taxed at both the corporate and shareholder levels. Effective tax rate = Corporate tax rate + (1 – corporate tax rate) * (individual marginal tax rate on dividends)

Tax imputation systems:
Under tax imputation systems, a shareholder receives a credit on dividends for the tax paid on corporate profits. Corporate profits that are distributed as dividends are only taxed once; the effective tax rate is equal to the individual marginal tax rate of the investor.

Split-rate taxation systems:
Under split-rate taxation systems, corporate profits are taxed at different rates depending on whether they are retained or paid out as dividends. Earnings distributed as dividends are still taxed twice, but the comparatively low corporate tax rate on earnings lessens that penalty.

**LO: Compare stable dividend with constant dividend payout ratio, and calculate the dividend under each policy.**

Stable dividend policy:
In this policy, a company tries to align its dividend growth rate to the company's long-term earnings growth rate. The stable dividend policy can be represented by a gradual adjustment process in which the expected dividend is equal to last year's dividend per share, plus [(this year's expected increase in earnings per share) × (the target payout ratio) × (an annual adjustment factor)].

Constant dividend payout ratio policy:
In this policy, a company applies a target dividend payout ratio to current earnings; therefore, dividends are more volatile than with a stable dividend policy.

**LO: Compare share repurchase methods.**

The four main types of repurchase methods are:

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- Buy in the open market
- Buy back a fixed number of shares at a fixed price
- Dutch Auction
- Repurchase by direct negotiation

**LO: Calculate and compare the effect of a share repurchase on earnings per share when 1) the repurchase is financed with the company's surplus cash and 2) the company uses debt to finance the repurchase.**

If net income remains unchanged, then a lower number of outstanding shares due to a share repurchase can result in higher EPS. However, the change in net income depends on how the repurchase is financed.

- If the share repurchase is financed internally, a repurchase increases EPS only if the funds used for the repurchase would not earn their cost of capital if retained by the company.
- If the repurchase is financed by taking external debt, the effect on EPS is positive if the earnings yield exceeds the after-tax cost of financing the repurchase. If the earnings yield is lower than the after-tax cost of financing, EPS would decrease.

**LO: Calculate the effect of a share repurchase on book value per share.**

If the market price per share is higher than the book value per share, BVPS will decrease after the share repurchase. On the other hand, if the market price per share is lower than the book value per share, BVPS will increase after the share repurchase.

**LO: Explain the choice between paying cash dividends and repurchasing shares.**

Theoretically, share repurchases are equivalent to cash dividends of equal amount in their effect on shareholders' wealth, all other things being equal. However, all other things are not necessarily equal. Listed below are factors to consider when evaluating share repurchases:

- Potential tax advantages
- Share price support/signaling that the company considers its shares a good investment
- Added managerial flexibility
- Offsetting dilution from employee stock options
- Increasing financial leverage

**LO: Describe broad trends in corporate payout policies.**

The following broad trends have been observed in dividend payout policies:

- A lower percentage of companies in a given U.S. stock market index have paid dividends than have companies in a comparable European stock market index.

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- The fraction of companies paying cash dividends has been in long-term decline in most developed markets (e.g., the United States, Canada, the European Union overall, the United Kingdom, and Japan).
- Since the early 1980s in the United States and the early 1990s in the United Kingdom and continental Europe, the fraction of companies engaging in share repurchases has trended upward.

**LO: Calculate and interpret dividend coverage ratios based on 1) net income and 2) free cash flow.**

Net Income: The traditional measure of dividend safety is the dividend payout ratio and its inverse, the dividend coverage ratio.

$$\text{Dividend payout ratio} = \frac{\text{Dividends}}{\text{Net Income}}$$

$$\text{Dividend coverage ratio} = \frac{\text{Net Income}}{\text{Dividends}}$$

A higher dividend payout ratio or a lower dividend coverage ratio tends to indicate, all else equal, a higher risk of a dividend cut.

Free Cash Flow: A more comprehensive measure of dividend safety is to use the FCFE coverage ratio.

$$\text{FCFE coverage ratio} = \frac{\text{FCFE}}{(\text{Dividends} + \text{Share repurchases})}$$

If this ratio is 1, the company is returning all available cash to its shareholders. If the ratio is significantly greater than 1, the company is building up its cash reserves. If the ratio is significantly less than 1, the company is paying out more than it is earning. This is not sustainable; it will deplete the cash reserves, and the company will have to raise new equity.

**LO: Identify characteristics of companies that may not be able to sustain their cash dividend.**

Dividend coverage ratios and FCFE coverage ratios below industry averages or trending downwards indicate that a company may not be able to sustain its cash distributions.

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