## Payout Policy

## Outline

- Comparison of Dividends and Share Repurchases
- The Tax Disadvantage of Dividends
- Signaling with Payout Policy
- Stock Dividends, Splits and Spin-offs

2012／03，苹果宣布未来三年内将花 450 亿美元用于分红和回购股票，这是苹果17年以来的首次分红，尽管苹果账户上已经有接近 1000亿美元的现金


amazon.com


2003年以来，IBM用来分红和回购股票的资金超过 1000 亿美元

## Uses of Free Cash Flow



## Important Dates for Microsoft's Special Dividend

| Declaration Date <br> Board declares <br> special dividend of <br> $\$ 3.00 /$ share | Ex-Dividend Date <br> Buyers of stock on <br> or after this date do <br> not receive dividend | $\underline{\text { Record Date }}$ <br> Shareholders <br> recorded by this <br> date receive dividend | Payable Date <br> Eligible shareholders <br> receive payments of <br> $\$ 3.00 /$ share |
| :---: | :---: | :---: | :---: |
| July 20, 2004 | November 15, 2004 | November 17, 2004 | December 2, 2004 |

## Dividend History for GM Stock, 1983-2006



## Share Repurchases

－An alternative way to pay cash to investors is through a share repurchase or buyback．
－The firm uses cash to buy shares of its own outstanding stock．
－Open Market Repurchase

- Tender offer（要约收购）
- Dutch auction（荷兰式拍卖）


## Comparison of Dividends and Share Repurchases

$>$ Alternative Policy I:
Pay Dividend with Excess Cash
> Alternative Policy 2:
Share Repurchase (No Dividend)
> Alternative Policy 3:
High Dividend (Equity Issue)

- Consider Genron Corporation. The firm's board is meeting to decide how to pay out $\$ 20$ million in excess cash to shareholders.
- Genron has no debt, its equity cost of capital equals its unlevered cost of capital of $12 \%$.
- With 10 million shares outstanding, Genron will be able to pay a $\$ 2$ dividend immediately.
- The firm expects to generate future free cash flows of $\$ 48$ million per year, thus it anticipates paying a dividend of $\$ 4.80$ per share each year thereafter.


## Alternative Policy I:

Pay Dividend with Excess Cash

|  | December 11 <br> (Cum-Dividend) | December 12 <br> (Ex-Dividend) |
| :--- | :---: | :---: |
| Cash | 20 | 0 |
| Other assets | 400 | 400 |
| Total market value | 420 | 400 |
| Shares (millions) | 10 | 10 |
| Share price | $\$ 42$ | $\$ 40$ |
| $P_{c u m}=$ Current Dividend $+P V$ (Future Dividends) $=2+\frac{4.80}{0.12}=2+40=\$ 42$ |  |  |
| $P_{e x}=P V($ Future Dividends $)=\frac{4.80}{0.12}=\$ 40$ |  |  |

## Alternative Policy 2: Share Repurchase (No Dividend)

December 11
(Before Repurchase)

December 12
(After Repurchase)0
Cash 20 0

| Other assets | 400 | 400 |
| :--- | ---: | ---: |
| Total market | 420 | 400 |
| value of assets | 10 | 9.524 |
| Shares (millions) | $\mathbf{\$ 4 2}$ | $\mathbf{\$ 4 2}$ |

-The net effect is that the share price remains unchanged.

- $\$ 48$ million $\div 9.524$ million shares $=\$ 5.04$ per share

$$
P_{r e p}=\frac{5.04}{0.12}=\$ 42
$$

## Alternative Policy 3: High Dividend (Equity Issue)

- Raise $\$ 28$ million by selling $\$ 28$ million $\div \$ 42$ per share $=0.67$ million shares
- The new dividend per share will be $\frac{\$ 48 \text { million }}{10.67 \text { million shares }}=\$ 4.50$ per share

And the cum-dividend share price will be
$P_{c u m}=4.50+\frac{4.50}{0.12}=4.50+37.50=\$ 42$

## Alternative Policy I: Pay Dividend with Excess Cash

- In a perfect capital market, when a dividend is paid, the share price drops by the amount of the dividend when the stock begins to trade ex-dividend.
> Alternative Policy 2: Share Repurchase (No Dividend)
> In perfect capital markets, 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.
> Alternative Policy 3: High Dividend (Equity Issue)
> 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.


# Modigliani-Miller and Dividend Policy Irrelevance 

- There is a trade-off between current and future dividends.
- If Genron pays a higher current dividend, future dividends will be lower.
- If Genron pays a lower current dividend, future dividends will be higher.


## TABLE 17.1

## Genron's Dividends per Share Each Year

 Under the Three Alternative PoliciesDividend Paid (\$ per share)
$\begin{array}{lccccc}$\cline { 2 - 6 } \& Initial \& \& \& \& Year 2\end{array}$] . .$.

## >Dividend Policy with Perfect Capital Markets

- In a perfect capital market, the type of payout is irrelevant.
- In reality, capital markets are not perfect and it is these imperfections that should determine the firm's payout policy.


## The Tax Disadvantage of Dividends

- Taxes on Dividends and Capital Gains
- Shareholders must pay taxes on the dividends they receive and they must also pay capital gains taxes when they sell their shares.
- Dividends are typically taxed at a higher rate than capital gains. In fact, long-term investors can defer the capital gains tax forever by not selling.


## TABLE 17.2 Long-Term Capital Gains Versus Dividend Tax Rates

 in the United States, 1971-2005| Year | Capital Gains | Dividends |
| :--- | :---: | :---: |
| $1971-1978$ | $35 \%$ | $70 \%$ |
| $1979-1981$ | $28 \%$ | $70 \%$ |
| $1982-1986$ | $20 \%$ | $50 \%$ |
| 1987 | $28 \%$ | $39 \%$ |
| $1988-1990$ | $28 \%$ | $28 \%$ |
| $1991-1992$ | $28 \%$ | $31 \%$ |
| $1993-1996$ | $28 \%$ | $40 \%$ |
| $1997-2000$ | $20 \%$ | $40 \%$ |
| $2001-2002$ | $20 \%$ | $39 \%$ |
| $2003-*$ | $15 \%$ | $15 \%$ |

*The current tax rates are set to expire in 2008 unless they are extended by Congress. The tax rates shown are for financial assets held for one year. For assets held less than one year, capital gains are taxed at the ordinary income tax rate (currently $35 \%$ for the highest bracket); the same is true for dividends if the assets are held for less than 61 days. Because the capital gains tax is not paid until the asset is sold, for assets held for longer than one year the effective capital gains tax rate is equal to the present value of the rate shown, when discounted by the after-tax risk-free interest rate for the additional number of years the asset is held.

## Issuing Equity to Pay a Dividend

## Problem

Suppose a firm raises $\$ 10$ million from shareholders and uses this cash to pay them $\$ 10$ million in dividends. If the dividend is taxed at a $40 \%$ rate, and if capital gains are taxed at a $15 \%$ rate, how much will shareholders receive after taxes?

## Solution

Shareholders will owe $40 \%$ of $\$ 10$ million, or $\$ 4$ million in dividend taxes. Because the value of the firm will fall when the dividend is paid, shareholders' capital gain on the stock will be $\$ 10$ million less when they sell, lowering their capital gains taxes by $15 \%$ of $\$ 10$ million or $\$ 1.5$ million. Thus, in total, shareholders will pay $\$ 4$ million $-\$ 1.5$ million $=\$ 2.5$ million in taxes, and they will receive back only $\$ 7.5$ million of their $\$ 10$ million investment.

## Optimal Dividend Policy with Taxes

- When the tax rate on dividends is greater than the tax rate on capital gains, shareholders will pay lower taxes if a firm uses share repurchases rather than dividends.
- The optimal dividend policy when the dividend tax rate exceeds the capital gain tax rate is to pay no dividends at all.


## The Declining Use of Dividends



## The Changing Composition of Shareholder Payouts



## Dividend Puzzle

- Why firms continue to issue dividends despite their tax disadvantage?

Dividend Capture and Tax Clienteles

- The preference for share repurchases rather than dividends depends on the difference between the dividend tax rate and the capital gains tax rate.
- Given these differences, firms may attract different groups of investors depending on their dividend policy.


## The Effective Dividend Tax Rate

Consider buying a stock just before it goes ex-dividend and selling the stock just after.
The equilibrium condition must be:
$\left(P_{c u m}-P_{e x}\right)\left(1-\tau_{g}\right)=\operatorname{Div}\left(1-\tau_{d}\right)$
Which can be stated as

$$
\begin{gathered}
P_{c u m}-P_{e x}=\operatorname{Div} \times\left(\frac{1-\tau_{d}}{1-\tau_{g}}\right)=\operatorname{Div} \times\left(1-\frac{\tau_{d}-\tau_{g}}{1-\tau_{g}}\right)=\operatorname{Div} \times\left(1-\tau_{d}^{*}\right) \\
\tau_{d}^{*}=\left(\frac{\tau_{d}-\tau_{g}}{1-\tau_{g}}\right)
\end{gathered}
$$

## Tax Differences Across Investors

- The effective dividend tax rate differs across investors for a variety of reasons.
- Income Level
- Investment Horizon
- Tax Jurisdiction
- Type of Investor or Investment Account
- As a result of their different tax rates investors will have varying preferences regarding dividends.


## TABLE 17.3 Differing Dividend Policy Preferences

## Across Investor Groups

| Investor Group | Dividend Policy Preference | Proportion of Investors |
| :--- | :--- | :---: |
| Individual investors | Tax disadvantage for dividends <br> Prefer share repurchase | $\sim 52 \%$ |
| Institutions, <br> pension funds, <br> retirement accounts | No tax preference <br> Prefer dividend policy that <br> matches income needs | $\sim 47 \%$ |
| Corporations Tax advantage for dividends |  |  |
| Source: Proportions based on Federal Reserve Flow of Funds Accounts, 2003. |  |  |

- Clientele Effect
- When the dividend policy of a firm reflects the tax preference of its investor clientele
- Individuals in the highest tax brackets have a preference for stocks that pay no or low dividends, whereas tax-free investors and corporations have a preference for stocks with high dividends.
- Dividend-Capture Theory
- The theory that absent transaction costs, investors can trade shares at the time of the dividend so that non-taxed investors receive the dividend
- An implication of this theory is that we should see large trading volume in a stock around the exdividend day, as high-tax investors sell and low-tax investors buy the stock in anticipation of the dividend, and then reverse those trades just after the ex-dividend date.



## Payout Versus Retention of Cash

- In perfect capital markets, once a firm has taken all positive-NPV investments, it is indifferent between saving excess cash and paying it out.
- If a firm has already taken all positive-NPV projects, any additional projects it takes on are zero or negative-NPV investments.
- Rather than waste excess cash on negative-NPV projects, a firm can use the cash to purchase financial assets.


## Delaying Dividends with Perfect Markets

## Problem

Barston Mining has $\$ 100,000$ in excess cash. Barston is considering investing the cash in one-year Treasury bills paying $6 \%$ interest, and then using the cash to pay a dividend next year. Alternatively, the firm can pay a dividend immediately and shareholders can invest the cash on their own. In a perfect capital market, which option will shareholders prefer?

## Solution

If Barston pays an immediate dividend, the shareholders receive $\$ 100,000$ today. If Barston retains the cash, at the end of one year the company will be able to pay a dividend of

$$
\$ 100,000 \times(1.06)=\$ 106,000
$$

This payoff is the same as if shareholders had invested the $\$ 100,000$ in Treasury bills themselves. In other words, the present value of this future dividend is exactly $\$ 106,000 \div(1.06)$ $=\$ 100,000$. Thus shareholders are indifferent about whether the firm pays the dividend immediately or retains the cash.

- MM Payout Irrelevance
- In perfect capital markets, if a firm invests excess cash flows in financial securities, the firm's choice of payout versus retention is irrelevant and does not affect the initial share price.

With Market Imperfections
There is a tradeoff: Retaining cash can reduce the costs of raising capital in the future, but it can also increase taxes and agency costs.

- When firms have excessive cash, managers may use the funds inefficiently by paying excessive executive perks, over-paying for acquisitions, etc.
- Paying out excess cash through dividends or share repurchases, rather than retaining cash, can boost the stock price by reducing managers' ability and temptation to waste resources.


## Retaining Cash with Corporate Taxes

## Problem

Suppose Barston must pay corporate taxes at a $35 \%$ rate on the interest it will earn from the one-year Treasury bill paying $6 \%$ interest. Would pension fund investors (who do not pay taxes on their investment income) prefer that Barston use its excess cash to pay the $\$ 100,000$ dividend immediately or retain the cash for one year?

## Solution

If Barston pays an immediate dividend, shareholders receive $\$ 100,000$ today. If Barston retains the cash for one year, it will earn an after-tax return on the Treasury bills of

$$
6 \% \times(1-0.35)=3.90 \%
$$

Thus, at the end of the year, Barston will pay a dividend of $\$ 100,000 \times(1.039)=\$ 103,900$.
This amount is less than the $\$ 106,000$ the investors would have earned if they had invested the $\$ 100,000$ in Treasury bills themselves. Because Barston must pay corporate taxes on the interest it earns, there is a tax disadvantage to retaining cash. Pension fund investors will therefore prefer that Barston pays the dividend now.

## Adjusting for Investor Taxes

- The decision to pay out versus retain cash may also affect the taxes paid by shareholders.
- When a firm retains cash, it must pay corporate tax on the interest it earns. In addition, the investor will owe capital gains tax on the increased value of the firm. In essence, the interest on retained cash is taxed twice.
- If the firm paid the cash to its shareholders instead, they could invest it and be taxed only once on the interest that they earn.
- The cost of retaining cash therefore depends on the combined effect of the corporate and capital gains taxes, compared to the single tax on interest income.

$$
\tau_{\text {retain }}^{*}=\left[1-\frac{\left(1-\tau_{c}\right)\left(1-\tau_{g}\right)}{\left(1-\tau_{i}\right)}\right]
$$

## Issuance and Distress Costs

- Generally, firms retain cash balances to cover potential future cash shortfalls, despite the tax disadvantage to retaining cash.
- The cost of holding cash to cover future potential cash needs should be compared to the reduction in transaction, agency, and adverse selection costs of raising new capital through new debt or equity issues.
- Firms should choose to retain to help with future growth opportunities and to avoid financial distress costs.
- It is not surprising that high-tech and biotechnology firms tend to retain and accumulate large amounts of cash.

TABLE 17.4
Firms with Large Cash Balances

| Ticker | Company | Cash <br> (\$ billion) | Percentage <br> of Market <br> Capitalization |
| :--- | :--- | :---: | :---: |
| MSFT | Microsoft | 34.7 | $12 \%$ |
| PFE | Pfizer | 22.2 | $12 \%$ |
| MRK | Merck | 15.6 | $21 \%$ |
| MOT | Motorola | 14.8 | $25 \%$ |
| INTC | Intel | 12.8 | $11 \%$ |
| HPQ | Hewlett-Packard | 12.0 | $13 \%$ |

Source: Yahoo! Finance, April 2006.

## Uses of Free Cash Flow



## - MM Payout Irrelevance

In perfect capital markets, the firm's choice of payout versus retention is irrelevant and does not affect the initial share price.

- With Market Imperfections

There is a tradeoff: Retaining cash can reduce the costs of raising capital in the future, but it can also increase taxes and agency costs.

Assume capital markets are perfect. Kay Industries currently has $\$ 100$ million invested in short term Treasury securities paying $7 \%$, and it pays out the interest payments on these securities each year as a dividend. The board is considering selling the Treasury securities and paying out the proceeds as a one-time dividend payment.

- a. If the board went ahead with this plan, what would happen to the value of Kay stock upon the announcement of a change in policy?
- b. What would happen to the value of Kay stock on the exdividend date of the one-time dividend?
- c. Given these price reactions, will this decision benefit investors?

Assume that Kay must pay a corporate tax rate of 35\%, and investors pay no taxes. Kay Industries currently has $\$ 100$ million invested in short term Treasury securities paying 7\%, and it pays out the interest payments on these securities each year as a dividend. The board is considering selling the Treasury securities and paying out the proceeds as a one-time dividend payment.

- a. If the board went ahead with this plan, what would happen to the value of Kay stock upon the announcement of a change in policy?
- b. What would happen to the value of Kay stock on the exdividend date of the one-time dividend?
- c. Given these price reactions, will this decision benefit investors?


## Signaling with Payout Policy

- Dividend Smoothing
- The practice of maintaining relatively constant dividends

Firm change dividends infrequently and dividends are much less volatile than earnings.

## GM's Earnings and Dividends per Share, 1985-2006



## - Research has found that

- Management believes that investors prefer stable dividends with sustained growth.

Management desires to maintain a long-term target level of dividends as a fraction of earnings.

Thus, firms raise their dividends only when they perceive a long-term sustainable increase in the expected level of future earnings, and cut them only as a last resort.

## Dividend Signaling Hypothesis

- The idea that dividend changes reflect managers' views about a firm's future earning prospects
- When a firm increases its dividend, it sends a positive signal to investors that management expects to be able to afford the higher dividend for the foreseeable future.
- When a firm decreases its dividend, it may signal that management has given up hope that earnings will rebound in the near term and so need to reduce the dividend to save cash.
- While an increase of a firm's dividend may signal management's optimism regarding its future cash flows, it might also signal a lack of investment opportunities.
- Conversely, a firm might cut its dividend to exploit new positive-NPV investment opportunities.
- In this case, the dividend decrease might lead to a positive, rather than negative, stock price reaction.


# Signaling and Share Repurchases 

- Share repurchases are a credible signal that the shares are under-priced, because if they are over-priced a share repurchase is costly for current shareholders.
- Investors will react favorably to share repurchase announcements.
- AMC Corporation currently has an enterprise value of $\$ 400$ million and $\$ 100$ million in excess cash. The firm has 10 million shares outstanding and no debt. Suppose AMC uses its excess cash to repurchase shares. After the share repurchase, news will come out that will change AMC's enterprise value to either $\$ 600$ million or $\$ 200$ million.
- a. What is AMC's share price prior to the share repurchase?
- AMC Corporation currently has an enterprise value of $\$ 400$ million and $\$ 100$ million in excess cash. The firm has 10 million shares outstanding and no debt. Suppose AMC uses its excess cash to repurchase shares. After the share repurchase, news will come out that will change AMC's enterprise value to either $\$ 600$ million or $\$ 200$ million.
- b. What is AMC's share price after the repurchase if its enterprise value goes up? What is AMC's share price after the repurchase if its enterprise value declines?

AMC Corporation currently has an enterprise value of $\$ 400$ million and $\$ 100$ million in excess cash. The firm has 10 million shares outstanding and no debt. Suppose AMC uses its excess cash to repurchase shares. After the share repurchase, news will come out that will change AMC's enterprise value to either $\$ 600$ million or $\$ 200$ million.

- c. Suppose AMC waits until after the news comes out to do the share repurchase. What is AMC's share price after the repurchase if its enterprise value goes up? What is AMC's share price after the repurchase if its enterprise value declines?
d. Suppose AMC management expects good news to come out. Based on your answers to parts (b) and (c), if management desires to maximize AMC's ultimate share price, will they undertake the repurchase before or after the news comes out? When would management undertake the repurchase if they expect bad news to come out?
- RP before news: $\$ 50$ After RP: $\$ 75$


## \$25

- RP after news: $\$ 70$ After RP: $\$ 70$ $\$ 30$ $\$ 30$

Given your answer to part (d), what effect would you expect an announcement of a share repurchase to have on the stock price? Why?

## Stock Dividends, Splits, and Spin-offs

- Stock Dividends and Splits
- With a stock dividend, a firm does not pay out any cash to shareholders.

As a result, the total market value of the firm's equity is unchanged. The only thing that is different is the number of shares outstanding.

- The stock price will therefore fall because the same total equity value is now divided over a larger number of shares.


## TABLE 17.5

## Cum and Ex-Dividend Share Price for Genron with a 50\% Stock Dividend (\$ million)

December 11
(Cum-Dividend)

December 12
(Ex-Dividend)

Cash
20
400 400

## Total market

value of assets
420
420
Shares (millions) 10
15
Share price $\$ 42$
\$28

## - Stock Dividends and Splits

- Stock dividends are not taxed, so from both the firm's and shareholders' perspectives, there is no real consequence to a stock dividend.

The number of shares is proportionally increased and the price per share is proportionally reduced so that there is no change in value.

## - Stock Dividends and Splits

- The typical motivation for a stock split is to keep the share price in a range thought to be attractive to small investors.
- If the share price rises "too high," it might be difficult for small investors to invest in the stock.
- Stock Dividends and Splits

Keeping the price "low" may make the stock more attractive to small investors and can increase the demand for and the liquidity of the stock, which may in turn boost the stock price.

- On average, announcements of stock splits are associated with a $2 \%$ increase in the stock price.


## - Stock Dividends and Splits

- Reverse Split

When the price of a company's stock falls too low and the company reduces the number of outstanding shares

## Distribution of Stock Prices for NYSE Firms (April 2005)



## Spin－offs 股票分拆

－Spin－off
－When a firm sells a subsidiary by selling shares in the subsidiary alone
－Non－cash special dividends are commonly used to spin off assets or a subsidiary as a separate company．

## Summary and Conclusions

- In a perfect capital market, dividend policy is irrelevant.
- Corporations "Smooth" Dividends.
- Dividends Provide Information to the Market.
- Consider share repurchase when there are few better uses for the cash.
- Raviv Industries has \$100 million in cash that it can use for a share repurchase. Suppose instead Raviv invests the funds in an account paying $10 \%$ interest for one year.
- a. If the corporate tax rate is $40 \%$, how much additional cash will Raviv have at the end of the year net of corporate taxes?
$100 \times 10 \% \times(1-40 \%)=\$ 6 m$

Raviv Industries has $\$ 100$ million in cash that it can use for a share repurchase. Suppose instead Raviv invests the funds in an account paying $10 \%$ interest for one year.

- b. If investors pay a $\mathbf{2 0 \%}$ tax rate on capital gains, by how much will the value of their shares have increased, net of capital gains taxes?
- $\$ 6 \times(\mathrm{I}-0.20)=\$ 4.8$ million
- Raviv Industries has $\$ 100$ million in cash that it can use for a share repurchase. Suppose instead Raviv invests the funds in an account paying 10\% interest for one year.
- c. If investors pay a 30\% tax rate on interest income, how much would they have had if they invested the $\$ 100$ million on their own?
- $100 * 10 \% \times(\mathrm{I}-0.30)=\$ 7$ million
- d. Suppose Raviv retained the cash so that it would not need to raise new funds from outside investors for an expansion it has planned for next year. If it did raise new funds, it would have to pay issuance fees. How much does Raviv need to save in issuance fees to make retaining the cash beneficial for its investors? (Assume fees can be expensed for corporate tax purposes.)
- \$ I spent on fees $=\$ I \times(I-0.40) \times(I-0.20)=$ $\$ 0.48$ to investors after corporate and cap gain tax. To make up the shortfall, fees $=(7-4.8) / 0.48=$ $\$ 4.583$ million.

