Chapter 18: Dividends and Other Payouts

18.1 February 16: Declaration date - the board of directors declares a dividend payment that will be made on March 14.
February 24: Ex-dividend date - the shares trade ex dividend on and after this date. Sellers before this date receive the dividend. Purchasers on or after this date do not receive the dividend.
February 26: Record date - the declared dividends are distributable to shareholders of record on this date.
March 14: Payable date - the checks are mailed.

18.2 Based on Miller and Modigliani reasoning, the stock will sell for $8.75. This is the same price you paid for the stock, and you are selling before the ex-dividend date. When the stock goes ex-dividend, the price is expected to fall $0.75 a share.

18.3 a. If the dividend is declared, the price of the stock will drop on the ex-dividend date by the value of the dividend, $5. It will then trade for $95.

b. If it is not declared, the price will remain at $100.

c. Mann's outflows for investments are $2,000,000. These outflows occur immediately. One year from now, the firm will realize $1,000,000 in net income and it will pay $500,000 in dividends, but the need for financing is immediate. Mann must finance $2,000,000 through the sale of shares worth $100. It must sell $2,000,000 / $100 = 20,000 shares.

d. The MM model is not realistic since it does not account for taxes, brokerage fees, uncertainty over future cash flows, investors' preferences, signaling effects, and agency costs.

18.4 a. The ex-dividend date is Feb. 27, which is two business days before the record date.

b. The stock price should drop by $1.25 on the ex-dividend date.

18.5 Knowing that share price can be expressed as the present value of expected future dividends does not make dividend policy relevant. Under the growing perpetuity model, if overall corporate cash flows are unchanged, then a change in dividend policy only changes the timing of the dividends. The PV of those dividends is the same. This is true because, given that future earnings are held constant, dividend policy simply represents a transfer between current and future stockholders.

In a more realistic context and assuming a finite holding period, the value of the shares should represent the future stock price as well as the dividends. Any cash flow not paid as a dividend will be reflected in the future stock price. As such the PV of the flows will not change with shifts in dividend policy; dividend policy is still irrelevant.
18.6  
a. The price is the PV of the dividends, and there are only 2 more cash flows associated with this stock: $D_1 = \$2$ and $D_2 = \$17.5375$. Find the present value of this cash flow series:

\[ PV = \frac{\$2}{1.15} + \frac{\$17.5375}{1.15^2} \]

\[ = \$15 \]

b. The current value of your shares is ($\$15)(500) = \$7,500$. Since you want equal payments, you want an annuity, which solves:

\[ \$7,500 = \frac{X}{1.15} + \frac{X}{1.15^2} \]

Solving for $X$, the cash flows are $\$4,613.3721$ each year. However, you will receive $\$1,000 in dividends in the first year, so you must sell shares to make up the difference. At the end of the first year, you must sell just enough shares to generate $\$3,613.3721$. In order to do that, first you must determine the stock price. At that time, the price will be the PV of the liquidating dividend:

\[ \frac{\$17.5375}{1.15} = \$15.25 \]

and

\[ \frac{\$3,613.3721}{\$15.25} = 236.942 \text{ shares} \]

So you must sell 236.942 shares.

At the end of the 2nd year, the remaining shares will each earn the liquidating dividend. To check your work, note that you will receive $\$4,613.38 ([500 - 236.942] x $\$17.5375$). (Rounding causes the discrepancy).

18.7  
a. Assume that the dividend has yet to be paid. Since the firm has a 100% payout policy, the entire net income, $\$32,000$ will be paid as a dividend. Then, the current value of the firm is the discounted value from 1 year hence, plus the current income:

\[ \text{Value} = \$32,000 + \frac{\$1,545,600}{1.12} \]

\[ = \$1,412,000 \]

b. The current price of $\$141.20$ per share will fall by the value of the dividend to $\$138$:

\[ \text{Price} = \$141.20 - \frac{\$32,000 \text{ net income}}{10,000 \text{ shares outstanding}} \]

\[ = \$141.20 - \$3.20 \]

\[ = \$138.00 \]
According to MM, it cannot be true that the low dividend is depressing the price. Since dividend policy is irrelevant, the level of the dividend should not matter. Any funds not distributed as dividends add to the value of the firm hence the stock price. These directors merely want to change the timing of the dividends (more now, less in the future). As the calculations below indicate, the value of the firm is unchanged by their proposal. Therefore, share price will be unchanged.

To show this, consider what would happen if the dividend was increased to $4.25. Since only the existing shareholders will get the dividend, the required dollar amount is $4.25 x 10,000 shares = $42,500. Then, the dollars to be raised are:

- $42,500 required funds
- $32,000 net income
- $10,500 dollars to be raised with sale of new shares

Since those new shareholders must also earn 12%, their share of the firm one year from now is $10,500 x 1.12 = $11,760, meaning that the old shareholders' interest falls to $1,545,600 - $11,760 = $1,533,840. Under this scenario, the current value of the firm is

\[
\text{Value} = \frac{\$42,500 + \frac{\$1,533,840}{1.12}}{1.12} = \$1,412,000
\]

Since the firm value is the same as under a), the change in dividend policy had no effect.

The new shareholders are not entitled to receive the current dividend. They will receive only the value of the equity one year hence. The PV of those flows is

\[
\frac{\$1,533,840}{1.12} = \$1,369,500
\]

so the share price will be

\[
\frac{\$1,369,500}{10,000} = \$136.95
\]

and shares sold will be

\[
\frac{\$10,500}{\$136.95} = 76.67
\]
18.8  a.  Expected price is the PV of future cashflows.  Since the $1.2 million is current period, and the $15 million is already PV, we don't have to discount. Therefore, price per share is total dollars scaled by total shares

\[
\text{Price} = \frac{1,200,000 + 15,000,000}{1,000,000} = $16.2
\]

b. He can invest the dividends into the Gibson stock.

Dividends that he gets = $1.2 million x 50% x 1,000 = $600

\[
\frac{0.6 + 15}{1} = $15.6
\]

Expected share price after dividend

Number of shares that Jeff needs to buy = 600 / 15.6 = 38

18.9  For either alternative, assume the $2,000,000 cash is after corporate tax.

Alternative 1:

Firm invests cash, either in T-bills or in preferred stock, and then pays out as special dividend in 3 years

\text{If the firm invests in T-Bills:}

\[
\text{after corporate tax yield} = 7(1-.35) = 4.55
\]

\[
\text{FV} = 2,000,000(1+.0455)^3 = 2,285,609.89
\]

After personal tax cash flow to the stock holders:

\[
\text{ATCF} = 2,285,609.89(1-.31) = 1,577,070.82
\]

\text{If the firm invests in preferred stock} (assume dividends will be re-invested in the same preferred stock):

after corporate tax dividend:

\[
\text{preferred dividends: 11\% (2,000,000) = $220,000}
\]

Since 70\% of preferred dvds are excluded from tax:

\[
\text{Taxable dvds} = 220,000 \times .3 = 66,000
\]

\[
\text{Tax} = 66,000 \times .35 = 23,100
\]

\[
\text{after corporate tax dividend} = 220,000 - 23,100 = 196,900
\]

Therefore,
after corp tax yield on pref stock = \frac{196,900}{2,000,000} = .09845

FV = 2,000,000 (1.09845)^3
   = 2,650,762.85

After personal tax cash flow to the stock holders:
\[ \text{ATCF} = 2,650,762.82 (1-.31) \]
   = 1,829,026.37

Alternative 2:
Firm pays out dividend now, and individuals invest in T-bills:

After personal tax cash to be invested
   = 2,000,000 (1-.31)
   = 1,380,000

After personal tax yield on T-bills
   = .07 (1-.31)
   = .0483

After personal tax cash flow to the stock holders:
\[ \text{ATCF} = \text{FV} = 1,380,000 (1.0483)^3 \]
   = 1,589,775.66

The after-tax cash flow for the shareholders is maximized when the firm invests the cash in the preferred stocks.

You should not expect to find either low dividend, high growth stocks or tax-free municipal bonds in the University of Pennsylvania’s portfolio. Since the university does not pay taxes on investment income, it will want to invest in securities, which provide the highest pre-tax return. Since tax-free municipal bonds generally provide lower returns than taxable securities, there is no reason for the university to hold municipal bonds.

The Litzenberger-Ramaswamy research (discussed in the section on empirical evidence) found that high dividend stocks pay higher pre-tax returns than risk comparable low dividend stocks because of the taxes on dividend income. Since the University of Pennsylvania does not pay taxes, it would be wise to invest in high dividend stocks rather than low dividend stocks in the same risk class.
18.11 a. If $T_c = T_0 = 0$, then
\[ P_e - P_b = D \]
\[ \frac{P_e - P_b}{D} = 1 \]

So, the stock price will fall by the amount of the dividend.

b. If $T_c = 0$ and $T_0 \neq 0$ then
\[ \frac{P_e - P_b}{D} = 1 - T_0 \]

So, the stock price will fall by the after-tax proceeds from the dividend.

c. In a, there was no tax disadvantage to dividends. Thus, investors are indifferent between buying the stock at $P_b$ and receiving the dividend or waiting, buying the stock at $P_e$ and receiving a subsequent capital gain. When only the dividend is taxed, after-tax proceeds must be equated for investors to be indifferent. Since the after-tax proceeds from the dividend are $D (1 - T_0)$, the price will fall by that amount.

d. No, Elton and Gruber’s paper is not a prescription for dividend policy. In a world with taxes, a firm should never issue stock to pay a dividend, but the presence of taxes does not imply that firms should not pay dividends from excess cash. The prudent firm, when faced with other financial considerations and legal constraints may choose to pay dividends.

18.12 a. Let $x$ be the ordinary income tax rate. The individual receives an after-tax dividend of $1,000(1-x)$ which she invests in Treasury bonds. The T-bond will generate after-tax cash flows to the investor of $1,000 (1 - x)[1 + 0.08(1-x)]$.

If the firm invests the money, its proceeds are $1,000 [1 + 0.08 (1-0.35)]$.

To be indifferent, the investor’s proceeds must be the same whether she invests the after-tax dividend or receives the proceeds from the firm’s investment and pays taxes on that amount.

Set the 2 equations equal and solve for $x$:

\[ 1,000(1-x)[1 + 0.08(1-x)] = (1-x)\{1,000[1 + 0.08(1-0.35)]\} \]

\[ x = 0.35 \]

Note: This argument does not depend upon the length of time the investment is held.

b. Yes, this is a reasonable answer. She is only indifferent if the after-tax proceeds from the $1,000 investment in identical securities are identical; that occurs only when the tax rates are identical.
c. Since both investors will receive the same pre-tax return, you would expect the same answer as in part a. Yet, because Carlson enjoys a tax benefit from investing in stock (70% of income from stock is exempt from corporate taxes), the tax rate on ordinary income which induces indifference, is much lower. Again, set the 2 equations equal and solve for $x$:

$$1,000(1-x)[1 + 0.12(1-x)] = (1 - x)[1,000[1+.12(1-[0.30)(.35)])]$$

$$x = 10.5\%$$

d. It is a compelling argument, but there are legal constraints, which deter firms from investing large sums in stock of other companies.

18.13 The bird-in-the-hand argument is based upon the erroneous assumption that increased dividends make a firm less risky. If capital spending and investment spending are unchanged, the firm’s overall cash flows are not affected by the dividend policy.

18.14 This argument is theoretically correct. In the real world with transaction costs of security trading, home-made dividends can be more expensive than dividends directly paid out by the firms. However, the existence of financial intermediaries such as mutual funds reduces the transaction costs for individuals greatly. Thus, as a whole, the desire for current income shouldn’t be a major factor favoring high-current-dividend policy.

18.15 To minimize her tax burden, your aunt should divest herself of high dividend yield stocks and invest in low dividend yield stock. Or, if possible, she should keep her high dividend stocks, borrow an equivalent amount of money and invest that money in a tax deferred account.

18.16 This is not evidence on investor preferences. A rise in stock price when the current dividend is increased may reflect expectations that future earnings, cash flows, etc. will rise. The better performance of the 115 companies, which raised their payouts, may also reflect a signal by management through the dividends that the firms were expected to do well in the future.

18.17 Virginia Power’s investors probably were not aware of the cash flow crunch. Thus, the price drop was due to the negative information about the cost overruns. Even if they were suspicious that there were overruns, the announcement would still cause a drop in price because it removed all uncertainty about overruns and indicated their magnitude.

18.18 As the firm has been paying out regular dividends for more than 10 years, the current severe cut in dividends can cause the shareholders to lower their expectations on current and future cash flows of the firm. It then results in the drop in the stock price.
18.19 a. Cap’s past behavior suggests a preference for capital gains while Widow Jones exhibits a preference for current income.

b. Cap could show the widow how to construct homemade dividends through the sale of stock. Of course, Cap will also have to convince her that she lives in an MM world. Remember that homemade dividends can only be constructed under the MM assumptions.

c. Widow Jones may still not invest in Neotech because of the transaction costs involved in constructing homemade dividends. Also the Widow may desire the uncertainty resolution which comes with high dividend stocks.

18.20 The capital investment needs of small, growing companies are very high. Therefore, payment of dividends could curtail their investment opportunities. Their other option is to issue stock to pay the dividend thereby incurring issuance costs. In either case, the companies and thus their investors are better off with a zero dividend policy during the firms’ rapid growth phases. This fact makes these firms attractive only to low dividend clientele.

This example demonstrates that dividend policy is relevant when there are issuance costs. Indeed, it may be relevant whenever the assumptions behind the MM model are not met.

18.21 Unless there is an unsatisfied high dividend clientele, a firm cannot improve its share price by switching policies. If the market is in equilibrium, the number of people who desire high dividend payout stocks should exactly equal the number of such stocks available. The supplies and demands of each clientele will be exactly met in equilibrium. If the market is not in equilibrium, the supply of high dividend payout stocks may be less than the demand. Only in such a situation could a firm benefit from a policy shift.

18.22 a. Using the formula from the text:
\[
Div_1 = Div_0 + s (t \times EPS_1 - Div_0)
\]
\[
= 1.25 + 0.3 (0.4 \times 4.5 - 1.25)
\]
\[
= 1.415
\]

b. same as in part a, except adjustment rate, s, is 0.6:
\[
Div_1 = Div_0 + s (t \times EPS_1 - Div_0)
\]
\[
= 1.25 + 0.6 (0.4 \times 4.5 - 1.25)
\]
\[
= 1.58
\]

Note: Part “a” is more conservative since the adjustment rate is lower.

18.23 This finding implies that firms use initial dividends to “signal” their potential growth and positive NPV prospects to the stock market. The initiation of regular cash dividends also serves to convince the market that their high current earnings are not temporary.