

## Answers to Warm-Up Exercises

E14-1. Relevant dividend dates

**Answer:** The firm will need \$260,000 of cash to pay the dividend. Because a weekend intervenes, the stock will begin selling ex-dividend on Friday, April 28, which is 4 days before the *date of record*.

E14-2. Residual theory of dividend payout

<b>Answer:</b>	1. New investments	\$2,700,000
	2. Retained earnings available	1,200,000
	3. Equity needed (40% of 1)	1,080,000
	4. Dividends [(2) – (3)]	120,000
	5. Dividend payout ratio [(4) ÷ (2)]	10%

E14-3. Legal constraints on dividend payout

**Answer:** If legal capital is defined solely as the par value of common stock, Ashkenazi will be able to pay out paid-in capital in excess of par plus all retained earnings.

Paid-in capital in excess of par	2,500,000
Retained earnings	<u>750,000</u>
Total available for dividends	\$3,250,000

Potential dividend per share (divide total available by 350,000 shares) = \$9.29

If legal capital is defined as both the par value of common stock and paid-in capital in excess of par, Ashkenazi will only be able to pay out the retained earnings.

Total available for dividends \$750,000

Potential dividend per share (divide total available by 350,000 shares) = \$2.14

E14-4. Constant dividend payout ratio

**Answer:** The first step in analyzing the Kopi scenario is to determine the historical payout ratio.

Year	EPS	Dividend/Share	Dividend Payout Ratio
2009	\$1.75	\$0.95	54.29%
2010	1.95	1.20	61.54
2011	2.05	1.25	60.98
2012	2.25	1.30	57.78

Discussion: Kopi Companies' historical dividend payout ratio has been fairly consistent and near the 60% constant payout ratio that the board is considering. So in terms of dollar amounts, the new policy would not significantly change the dividend payout to the shareholders in the future. Once the dividend is tied to a constant percentage, the dividends will be tied to Kopi's future earnings and could fluctuate from year to year. However, the evidence from the past

4 years shows that Kopi's earnings have increased from 5% to 11% per year with no down years.

E14-5. Stock dividend

**Answer:** After the 10% stock dividend, Hilo's stockholder's equity account is as follows:

Common stock (55,000 shares at \$3 par)	\$165,000
Paid-in capital in excess of par	335,000
Retained earnings	350,000
Total stockholders' equity	<u>\$850,000</u>

## ■ Solutions to Problems

P14-1. Dividend payment procedures

### LG 1; Basic

a.	Debit	Credit
Retained earnings (Dr.)	\$330,000	
Dividends payable (Cr.)		\$330,000

b. Ex dividend date is Thursday, July 6.

c. Cash	\$170,000	Dividends payable	\$ 0
		Retained earnings	\$2,170,000

d. The dividend payment will result in a decrease in total assets equal to the amount of the payment.

e. Notwithstanding general market fluctuations, the stock price would be expected to drop by the amount of the declared dividend on the ex dividend date.

P14-2. Personal finance: Dividend payment

### LG 1; Intermediate

a. Friday, May 7

- b. Monday, May 10
- c. The price of the stock should drop by the amount of the dividend (\$0.80).
- d. She would be better off buying the stock at \$35 and taking the dividend. Her \$0.80 dividend would be taxed at the maximum rate of 15% and her \$4 short-term capital gain would be taxed at the ordinary marginal tax rate, which is probably higher than the 15%. If she bought the stock post dividend for \$34.20 she would pay her marginal ordinary tax rate on the full \$4.80 of short-term capital gains.

P14-3. Residual dividend policy

**LG 2; Intermediate**

- a. *Residual dividend policy* means that the firm will consider its investment opportunities first. If after meeting these requirements there are funds left, the firm will pay the residual out in the form of dividends. Thus, if the firm has excellent investment opportunities, the dividend will be smaller than if investment opportunities are limited.

b. **Proposed**

Capital budget	\$2,000,000	\$3,000,000	\$4,000,000
Debt portion (40%)	800,000	1,200,000	1,600,000
Equity portion (60%)	1,200,000	1,800,000	2,400,000
Available retained earnings	\$2,000,000	\$2,000,000	\$2,000,000
Dividend	800,000	200,000	0
Dividend payout ratio	40%	10%	0%

- c. The amount of dividends paid is reduced as capital expenditures increase. Thus, if the firm chooses larger capital investments, dividend payments will be smaller or nonexistent.

P14-4. Dividend constraints

**LG 3; Intermediate**

- a. Maximum dividend:  $\frac{\$1,900,000}{400,000} = \$4.75$  per share
- b. Largest dividend without borrowing:  $\frac{\$160,000}{400,000} = \$0.40$  per share
- c. In part a, cash and retained earnings each decrease by \$1,900,000.  
In part b, cash and retained earnings each decrease by \$160,000.
- d. Retained earnings (and hence stockholders' equity) decrease by \$80,000.

P14-5. Dividend constraints

**LG 3; Intermediate**

- a. Maximum dividend:  $\frac{\$40,000}{25,000} = \$1.60$  per share
- b. A \$20,000 decrease in cash and retained earnings is the result of a \$0.80 per share dividend.
- c. Cash is the key constraint, because a firm cannot pay out more in dividends than it has in cash, unless it borrows.

P14-6. Low-regular-and-extra dividend policy

**LG 4; Intermediate**

a.

Year	Payout %	Year	Payout %
2007	25.4	2010	22.7
2008	23.3	2011	20.8
2009	17.9	2012	16.7

b.

Year	25% Payout	Actual Payout	\$ Diff.	Year	25% Payout	Actual Payout	\$ Diff.
2007	\$0.49	0.50	0.01	2010	0.55	0.50	-0.05
2008	0.54	0.50	-0.04	2011	0.60	0.50	-0.10
2009	0.70	0.50	-0.20	2012	0.75	0.50	-0.25

- c. In this example the firm would not pay any extra dividend since the actual dividend did not fall below the 25% minimum by \$1.00 in any year. When the “extra” dividend is not paid due to the \$1.00 minimum, the extra cash can be used for additional investment by placing the funds in a short-term investment account.
- d. If the firm expects the earnings to remain above the earnings per share (EPS) of \$2.20 the dividend should be raised to \$0.55 per share. The 55 cents per share will retain the 25% target payout but allow the firm to pay a higher regular dividend without jeopardizing the cash position of the firm by paying too high of a regular dividend.

P14-7. Alternative dividend policies

**LG 4; Intermediate**

Year	Dividend	Year	Dividend
2003	\$0.10	2008	\$1.28
2004	0.00	2009	1.12
2005	0.72	2010	1.28
2006	0.48	2011	1.52
2007	0.96	2012	1.60

b.

2003	\$1.00	2008	\$1.10
2004	1.00	2009	1.20
2005	1.00	2010	1.30
2006	1.00	2011	1.40
2007	1.00	2012	1.50

(Continued)

<b>Year</b>	<b>Dividend</b>	<b>Year</b>	<b>Dividend</b>
c.			
2003	\$0.50	2008	\$0.66
2004	0.50	2009	0.50
2005	0.50	2010	0.66
2006	0.50	2011	1.14
2007	0.50	2012	1.30

- d. With a constant-payout policy, if the firm's earnings drop or a loss occurs the dividends will be low or nonexistent. A regular dividend or a low-regular-and-extra dividend policy reduces owner uncertainty by paying relatively fixed and continuous dividends.

P14-8. Alternative dividend policies

**LG 4; Challenge**

<b>Year</b>	<b>Dividend</b>	<b>Year</b>	<b>Dividend</b>
a.			
2005	\$0.22	2009	\$0.00
2006	0.50	2010	0.60
2007	0.30	2011	0.78
2008	0.53	2012	0.70
b.			
2005	\$0.50	2009	\$0.50
2006	0.50	2010	0.50
2007	0.50	2011	0.60
2008	0.50	2012	0.60
c.			
2005	\$0.50	2009	\$0.50
2006	0.50	2010	0.50
2007	0.50	2011	0.88
2008	0.50	2012	0.78
2005	\$0.50	2009	\$0.50
2006	0.50	2010	0.62
2007	0.50	2011	0.88
2008	0.53	2012	0.78

- e. Part a uses a constant-payout-ratio dividend policy, which will yield low or no dividends if earnings decline or a loss occurs. Part b uses a regular dividend policy, which minimizes the owners' uncertainty of earnings. Part c uses a low-regular-and-extra dividend policy, giving investors a stable income which is necessary to build confidence in the firm. Part d still provides the stability of parts b and c and provides an extra \$0.04 per year.

P14-9. Stock dividend—firm

**LG 5; Intermediate**

	<b>(a) 5% Stock Dividend</b>	<b>(b) (1) 10% Stock Dividend</b>	<b>(b) (2) 20% Stock Dividend</b>
Preferred stock	\$100,000	\$100,000	\$100,000
Common stock (xx,xxx shares @\$2.00 par)	21,000 <sup>1</sup>	22,000 <sup>2</sup>	24,000 <sup>3</sup>
Paid-in capital in excess of par	294,000	308,000	336,000
Retained earnings	<u>85,000</u>	<u>70,000</u>	<u>40,000</u>
Stockholders' equity	\$500,000	\$500,000	\$500,000

<sup>1</sup> 10,500 shares

<sup>2</sup> 11,000 shares

<sup>3</sup> 12,000 shares

- c. Stockholders' equity has not changed. Funds have only been redistributed between the stockholders' equity accounts.

P14-10. Cash versus stock dividend

**LG 5; Intermediate**

a.

	<b>Cash Dividend</b>			
	<b>\$0.01</b>	<b>\$0.05</b>	<b>\$0.10</b>	<b>\$0.20</b>
Preferred stock	\$ 100,000	\$ 100,000	\$100,000	\$100,000
Common stock (400,000 shares @\$1.00 par)	400,000	400,000	400,000	400,000
Paid-in capital in excess of par	200,000	200,000	200,000	200,000
Retained earnings	<u>316,000</u>	<u>300,000</u>	<u>280,000</u>	<u>240,000</u>
Stockholders' equity	\$1,016,000	\$1,000,000	\$980,000	\$940,000

b.

	<b>Stock Dividend</b>			
	<b>1%</b>	<b>5%</b>	<b>10%</b>	<b>20%</b>
Preferred stock	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
Common stock (xxx,xxx shares @\$1.00 par)	404,000	420,000	440,000	480,000
Paid-in capital in excess of par	212,000	260,000	320,000	440,000
Retained earnings	<u>304,000</u>	<u>240,000</u>	<u>160,000</u>	<u>0</u>
Stockholders' equity	<u>\$1,020,000</u>	<u>\$1,020,000</u>	<u>\$1,020,000</u>	<u>\$1,020,000</u>

- c. Stock dividends do not affect stockholders' equity; they only redistribute retained earnings into common stock and additional paid-in capital accounts. Cash dividends cause a decrease in retained earnings, and hence in overall stockholders' equity.

P14-11. Personal finance: Stock dividend—investor

**LG 5; Intermediate**

- a.  $EPS = \frac{\$80,000}{40,000} = \$2.00$
- b. Percent ownership =  $\frac{400}{40,000} = 1.0\%$
- c. Percent ownership after stock dividend:  $440 \div 44,000 = 1\%$ ; stock dividends maintain the same ownership percentage. They do not have a real value.
- d. Market price:  $\$22 \div 1.10 = \$20$  per share
- e. Her proportion of ownership in the firm will remain the same, and as long as the firm's earnings remain unchanged, so, too, will her total share of earnings.

P14-12. Personal finance: Stock dividend—investor

**LG 5; Challenge**

- a.  $EPS = \frac{\$120,000}{50,000} = \$2.40$  per share
- b. Percent ownership =  $\frac{500}{50,000} = 1.0\%$

His proportionate ownership remains the same in each case

- c. Market price =  $\frac{\$40}{1.05} = \$38.10$
- Market price =  $\frac{\$40}{1.10} = \$36.36$

The market price of the stock will drop to maintain the same proportion, since more shares are being used.

- d.  $EPS = \frac{\$2.40}{1.05} = \$2.29$  per share  
 $EPS = \frac{\$2.40}{1.10} = \$2.18$  per share
- e. Value of holdings: \$20,000 under each plan.  
 As long as the firm's earnings remain unchanged, his total share of earnings will be the same.
- f. The investor should have no preference because the only value is of a psychological nature.  
 After a stock split or dividend, however, the stock price tends to go up faster than before.

P14-13. Stock split—firm

**LG 6; Intermediate**

- a.  $CS = \$1,800,000$  (1,200,000 shares @ \$1.50 par)  
 b.  $CS = \$1,800,000$  (400,000 shares @ \$4.50 par)  
 c.  $CS = \$1,800,000$  (1,800,000 shares @ \$1.00 par)  
 d.  $CS = \$1,800,000$  (3,600,000 shares @ \$0.50 par)  
 e.  $CS = \$1,800,000$  (150,000 shares @ \$12.00 par)

P14-14. Stock splits

**LG 1; Easy**

- a.  $400 \times 2 = 800$  shares will be owned by Nathan after the split.  
 b.  $\$75.14 \div 2 = \$37.57$  per share of General Mills after the 2:1 split.  
 c. Value of General Mills in Nathan's portfolio = shares owned  $\times$  price per share.  
 $400 \times \$75.14 = \$30,056$  value before the split  
 $800 \times \$37.57 = \$30,056$  value after the split  
 d. Nathan does not experience a gain or a loss, and hence his financial conditions does not change. Nathan still owns the same percentage of all Apple shares.  
 e. Even if there was a gain or loss attributable to the split, Nathan would not have any tax liability unless he actually sold the stock and realized that change for tax purposes.

P14-15. Stock split versus stock dividend—firm

**LG 5, 6; Challenge**

- a. There would be a decrease in the par value of the stock from \$3 to \$2 per share. The shares outstanding would increase to 150,000. The common stock account would still be \$300,000 (150,000 shares at \$2 par).  
 b. The stock price would decrease by one-third to \$80 per share.  
 c. Before stock split: \$100 per share ( $\$10,000,000 \div 100,000$ )  
 After stock split: \$66.67 per share ( $\$10,000,000 \div 150,000$ )  
 d. (1) A 50% stock dividend would increase the number of shares to 150,000 but would not entail a decrease in par value. There would be a transfer of \$150,000 into the common stock account and \$5,850,000 in the paid-in capital in excess of par account from the retained earnings account, which decreases to \$4,000,000.  
 (2) The stock price would change to approximately the same level.  
 (3) Before dividend: \$100 per share ( $\$10,000,000 \div 100,000$ )  
 After dividend: \$26.67 per share ( $\$4,000,000 \div 150,000$ )



- e. Stock splits cause an increase in the number of shares outstanding and a decrease in the par value of the stock with no alteration of the firm's equity structure. However, stock dividends cause an increase in the number of shares outstanding without any decrease in par value. Stock dividends cause a transfer of funds from the retained earnings account into the common stock account and paid-in capital in excess of par account.

P14-16. Stock dividend versus stock split—firm

**LG 5, 6; Challenge**

- a. A 20% stock dividend would increase the number of shares to 120,000 but would not entail a decrease in par value. There would be a transfer of \$20,000 into the common stock account and \$580,000  $[(\$30 - \$1) \times 20,000]$  in the paid-in capital in excess of par account from the retained earnings account. The per-share earnings would decrease since net income remains the same but the number of shares outstanding increases by 20,000.

$$\text{EPS stock dividend} = \frac{\$360,000}{120,000} = \$3.00$$

- b. There would be a decrease in the par value of the stock from \$1 to \$0.80 per share. The shares outstanding would increase to 125,000. The common stock account would still be \$100,000 (125,000 shares at \$0.80 par). The per-share earnings would decrease since net income remains the same but the number of shares outstanding increases by 25,000.

$$\text{EPS stock split} = \frac{\$360,000}{125,000} = \$2.88$$

- c. The option in part b the stock split will accomplish the goal of reducing the stock price while maintaining a stable level of retained earnings. A stock split does not cause any change in retained earnings but reduces the price of the shares in the same proportion as the split ratio.
- d. The firm may be restricted in the amount of retained earnings available for dividend payments, whether cash or stock dividends. Stock splits do not have any impact on the firm's retained earnings.

P14-17. Stock repurchase

**LG 6; Intermediate**

a. Shares to be repurchased =  $\frac{\$400,000}{\$21.00} = 19,047$  shares

b.  $\text{EPS} = \frac{\$800,000}{(400,000 - 19,047)} = \frac{\$800,000}{380,953} = \$2.10$  per share

If 19,047 shares are repurchased, the number of common shares outstanding will decrease and earnings per share will increase.

- c. Market price:  $\$2.10 \times 10 = \$21.00$  per share.
- d. The stock repurchase results in an increase in earnings per share from \$2.00 to \$2.10.
- e. The pre-repurchase market price is different from the post-repurchase market price by the amount of the cash dividend paid. The post-repurchase price is higher because there are fewer shares outstanding.

Cash dividends are taxable to the stockholder when they are distributed and are taxed at a maximum 15% tax rate. If the firm repurchases stock, taxes on the increased value resulting from the purchase are also due at the time of the repurchase. The additional \$1 gain would be taxed at either the long-term capital gains rate of 15%, the same as the dividend, unless the stock was held for less than 1 year; then the gain would be short term and taxed at the higher marginal ordinary income rate. Which alternative is preferred by the shareholders would depend on the investors' holding period for the stock at the time the repurchase is made. Taxes would not have to be paid on the repurchase gains until the shares are sold.

P14-18. Stock repurchase

**LG 6; Challenge**

a. Shares outstanding needed =  $\frac{(\$1,200,000 \times 0.40)}{\$2.00} = \frac{\$480,000}{\$2.00} = 240,000$

b.  $300,000 - 240,000 = 60,000$  shares to repurchase

P14-19. Ethics problem

**LG 6; Intermediate**

Students should argue that all of the methods being contemplated by the chief financial officer (CFO) are legal and therefore not unethical. Others may argue that even if legal, the actions are unethical and should not be pursued. The final question tries to address how firm the students' convictions are. It is one thing to demonstrate a course of action and make a recommendation. Acting in the face of an opposing view by a superior is a bit more difficult, but should not discourage the student from maintaining their viewpoint.