

Chapter 5

The Stock Market

Concept Questions

1. The new car lot is a primary market; every new car sold is an IPO. The used car lot is a secondary market. The Chevy retailer is a dealer, buying and selling out of inventory.
2. Both. When trading occurs in the crowd, the specialist acts as a broker. If necessary, the specialist will buy or sell out of inventory to fill an order.
3. A market order is an order to execute the trade at the current market price. A limit order specifies the highest (lowest) price at which you are willing to purchase (sell) the stock. The downside of a market order is that in a volatile market, the market price could change dramatically before your order is executed. The downside of a limit order is that the stock may never hit the limit price, meaning your trade will not be executed.
4. A stop-loss order is an order to sell at market if the price declines to the stop price. As the name suggests, it is a tool to limit losses. As with any stop order, however, the price received may be worse than the stop price, so it may not work as well as the investor hopes. For example, suppose a stock is selling for \$50. An investor has a stop loss on at \$45, thereby limiting the potential loss to \$5, or so the naive investor thinks. However, after the market closes, the company announces a disaster. Next morning, the stock opens at \$30. The investor's sell order will be executed, but the loss suffered will far exceed \$5 per share.
5. You should submit a stop order; more specifically, a stop buy order with a stop price of \$120.
6. No, you should submit a stop order to buy at \$70, also called a stop buy. A limit buy would be executed immediately at the current price.
7. With a multiple market maker system, there are, in general, multiple bid and ask prices. The inside quotes are the best ones, the highest bid and the lowest ask.
8. What market is covered; what types of stocks are included; how many stocks are included; and how the index is calculated.
9. The issue is index staleness. As more stocks are added, we generally start moving into less frequently traded issues. Thus, the tradeoff is between comprehensiveness and currency.
10. The uptick rule prohibits short selling unless the last stock price change was positive, i.e. an uptick. Until recently, it applied primarily to the NYSE, but the NASDAQ now has a similar rule. It exists to prevent "bear raids," an illegal market manipulation involving large-scale short selling intended to force down the stock price.

Core Questions

NOTE: All end of chapter problems were solved using a spreadsheet. Many problems require multiple

steps. Due to space and readability constraints, when these intermediate steps are included in this

solutions manual, rounding may appear to have occurred. However, the final answer for each problem is

found without rounding during any step in the problem.

1. $d = (46 + 128/2 + 75) / [(45 + 128 + 75) / 3] = 2.22892$

2. $d = (46 + 128/3 + 75) / [(45 + 128 + 75) / 3] = 1.97189$

3. a. 100 shares at \$70.56

b. 100 shares at \$70.53

c. 100 shares at \$70.56 and 300 shares at \$70.57

4. Beginning index value = $(84 + 41)/2 = 62.50$

Ending index value = $(93 + 49)/2 = 71.00$

Return = $(71.00 - 62.50)/62.50 = 13.60\%$

5. Beginning value = $[(\$84 \text{ }^\circ - 45,000) + (\$41 \text{ }^\circ - 60,000)] / 2 = \$3,120,000$

Ending value = $[(\$93 \text{ }^\circ - 45,000) + (\$49 \text{ }^\circ - 60,000)] / 2 = \$3,562,500$

Return = $(\$3,562,500 - 3,120,000) / \$3,120,000 = 14.18\%$

Note you could also solve the problem as:

Beginning value = $(\$84 \text{ }^\circ - 45,000) + (\$41 \text{ }^\circ - 60,000) = \$6,240,000$

Ending value = $(\$93 \text{ }^\circ - 45,000) + (\$49 \text{ }^\circ - 60,000) = \$7,125,000$

Return = $(\$7,125,000 - 6,240,000) / \$6,240,000 = 14.18\%$

The interpretation in this case is the percentage increase in the market value of the market.

6. Beginning of year: $\$3,210,000 / \$3,120,000 \text{ }^\circ - 100 = 100.00$

End of year: $\$3,562,500 / \$3,120,000 \text{ }^\circ - 100 = 114.18$

Note you would receive the same answer with either initial valuation method:

Beginning of year: $\$6,240,000 / \$6,240,000 \text{ }^\circ - 100 = 100.00$

End of year: $\$7,125,000 / \$6,240,000 \text{ }^\circ - 100 = 114.18$

7. $408.16(1 + .1418) = 466.05$

8. Year 1: $6,251 \text{ million} / 6,251 \text{ million }^\circ - 500 = 500.00$

Year 2: $6,483 \text{ million} / 6,251 \text{ million }^\circ - 500 = 518.56$

Year 3: $6,124 \text{ million} / 6,251 \text{ million }^\circ - 500 = 489.84$

Year 4: $6,503 \text{ million} / 6,251 \text{ million }^\circ - 500 = 520.16$

Year 2: $6,698 \text{ million} / 6,251 \text{ million }^\circ - 500 = 535.75$

Intermediate Questions

9. $d = (46/(1/3) + 128 + 75) / [(46 + 128 + 75) / 3] = 4.10843$

10. Feb. 6: $\Sigma P / 0.12560864 = 10,412.82$; $\Sigma P = 1307.94$

Feb 7: $\Sigma P = 1307.94 + 5 = 1312.94$; Index level = $1312.94 / 0.12560864 = 10,452.63$

B-22 SOLUTIONS

11. IBM: $\Sigma P = 1307.94 + 80.54(.05) = 1311.967$; Index level = $1311.967 / 0.12560864 = 10,444.88$

Disney: $\Sigma P = 1307.94 + 25.29(.05) = 1309.2045$; Index level = $1309.2045 / 0.12560864 = 10,422.89$

12. $\Sigma P = 1307.94 + 30 = 1337.94$; Index level = $1337.94 / 0.12560864 = 10,651.66$

13. $\Sigma P / d = 3,487.25$; $d = \Sigma P / 3,487.25$

$(\Sigma P + 5) / d = 3,502.18$; $d = (\Sigma P + 5) / 3,502.18$

$\Sigma P / 3,487.25 = (\Sigma P + 5) / 3,502.18$

$3,502.18\Sigma P = 3,487.25\Sigma P + 17,436.25$

$14.93\Sigma P = 17,436.25$

$\Sigma P = 1,167.87$

$1,167.87 / d = 3,487.25$

$d = 0.33489618$

14. a. $1/1/04$: Index value = $(119 + 35 + 62)/3 = 72.00$

b. 1/1/05: Index value = $(123 + 31 + 54)/3 = 69.33$

2004 return = $(69.33 - 72.00)/72.00 = -3.70\%$

1/1/06: Index value = $(132 + 39 + 68)/3 = 79.67$

2005 return = $(79.67 - 69.33)/69.33 = 14.90\%$

15. Share price after the stock split is \$41.

Index value on 1/1/05 without the split is 69.33 (see above).

$(41 + 31 + 54)/d = 69.33$; $d = 126 / 69.33 = 1.8317308$

1/1/06: Index value = $(44 + 39 + 68)/1.8317308 = 83.0899$

2005 return = $(83.0899 - 69.33)/69.33 = 19.84\%$.

Notice without the split the index return for 2004 is 14.90%.

16. a. 1/1/04: Index value = $[119(220) + 35(400) + 62(350)] / 10 = 6188.00$

b. 1/1/05: Index value = $[123(220) + 31(400) + 54(350)] / 10 = 5836.00$

2004 return = $(5836 - 6188) / 6188 = -5.69\%$

1/1/06: Index value = $[132(220) + 39(400) + 68(350)] / 10 = 6844.00$

2005 return = $(6844 - 5836) / 5836 = 17.27\%$

17. The index values and returns will be unchanged; the stock split changes the share price, but not the

total value of the firm.

CHAPTER 5 B-23

18. 2004: Douglas McDonnell return = $(123 - 119)/119 = 3.36\%$

Dynamics General return = $(31 - 35)/35 = -11.43\%$

International Rockwell return = $(54 - 62)/62 = -12.90\%$

2004: Index return = $(.0336 - .1143 - .1290)/3 = -6.99\%$

1/1/05: Index value = $100(1 - .0699) = 93.01$

2005: Douglas McDonnell return = $(132 - 123)/123 = 7.32\%$

Dynamics General return = $(39 - 31)/31 = 25.81\%$

International Rockwell return = $(68 - 54)/54 = 25.93\%$

2005: Index return = $(.0732 + .2581 + .2593)/3 = 19.68\%$

1/1/06: Index value = $93.01(1.1968) = 111.32$

19. Looking back at Chapter 1, you can see that there are years in which small cap stocks outperform

large cap stocks. In years with better performance by small companies, we would expect the returns

from the equal-weighted index to outperform the value-weighted index since the value-weighted

index is weighted toward larger companies. In years where large cap stocks outperform small cap

stocks, we would see the value-weighted index with a higher return than an equal-weighted index.

20. 2004: Douglas McDonnell return = $(123 - 119)/119 = 3.36\%$

Dynamics General return = $(31 - 35)/35 = -11.43\%$

International Rockwell return = $(54 - 62)/62 = -12.90\%$

2004: Index return = $[(1 + .0336)(1 - .1143)(1 - .1290)]^{1/3} - 1 = -7.27\%$

1/1/05: Index value = $100(1 - .0727) = 92.73$

2005: Douglas McDonnell return = $(132 - 123)/123 = 7.32\%$

Dynamics General return = $(39 - 31)/31 = 25.81\%$

International Rockwell return = $(68 - 54)/54 = 25.93\%$

2005: Index return = $[(1 + .0732)(1 + .2851)(1 + .2593)]^{1/3} - 1 = 19.35\%$

1/1/06: Index value = $92.73(1.1935) = 110.67$

21. A geometric index is most suitable to capture the short-term price movements of the stocks in the

index, but is not suitable for long-term investment performance measurement. A geometric index is

an attempt to capture the median stock return. There are two reasons for the difference in

the index

levels. First, the geometric index systematically understates performance. The second reason is

volatility. The geometric index, by its construction, filters out volatility. On the other hand, an equalweighted

index tends to capture market upswings.

B-24 SOLUTIONS

22. For price-weighted indices, purchase an equal number of shares for each firm in the index. For

value-weighted indices, purchase shares (perhaps in fractional amounts) so that the investment in

each stock, relative to your total portfolio value, is equal to that stock's proportional market value

relative to all firms in the index. In other words, if one company is twice as big as the other, put twice

as much money in that company. Finally, for equally-weighted indices, purchase equal dollar amounts of each stock in the index.

Assuming no cash dividends or stock splits, both the price-weighted and value-weighted replication strategies require no additional rebalancing. However, an equally weighted index will not

stay equally weighted through time, so it will have to be rebalanced by selling off investments that

have gone up in value and buying investments that have gone down in value.

A typical small investor would most likely use something like the equally-weighted index replication strategy, i.e., buying more-or-less equal dollar amounts of a basket of stocks, but the

portfolio probably would not stay equally weighted. The value-weighted and equally-weighted index

replication strategies are more difficult to implement than the price-weighted strategy because they

would likely involve the purchase of odd lots and fractional shares, raising transactions costs. The

value-weighted strategy is the most difficult because of the extra computation needed to determine

the initial amounts to invest.

Chapter 6

Common Stock Valuation

Concept Questions

1. The basic principle is that we can value a share of stock by computing the present value of all future

dividends.

2. P/E ratios measure the price of a share of stock relative to current earnings. All else the same, future

earnings will be larger for a growth stock than a value stock, so investors will pay more relative to

today's earnings.

3. As you know, firms can have negative earnings. But, for a firm to survive over a long period,

earnings must eventually become positive. The residual income model will give a negative stock

value when earnings are negative, thus it cannot be used reliably in this situation.

4. It is computed by taking net income plus depreciation and then dividing by the number of shares

outstanding.

5. The value of any investment depends on its cash flows; i.e., what investors will actually receive. The cash flows from a share of stock are the dividends.

6. Investors believe the company will eventually start paying dividends (or be sold to another company).

7. In general, companies that need the cash will often forgo dividends since dividends are a cash

expense. Young, growing companies with profitable investment opportunities are one example;

another example is a company in financial distress.

8. The general method for valuing a share of stock is to find the present value of all expected future

dividends. The constant perpetual growth model presented in the text is only valid (i) if dividends are

expected to occur forever, that is, the stock provides dividends in perpetuity, and (ii) if a constant

growth rate of dividends occurs forever. A violation of the first assumption might be a company that

is expected to cease operations and dissolve itself some finite number of years from now. The stock

of such a company would be valued by the methods of this chapter by applying the general method of

valuation. A violation of the second assumption might be a start-up firm that isn't currently paying

any dividends, but is expected to eventually start making dividend payments some number of years

from now. This stock would also be valued by the general dividend valuation method of this chapter.

9. The two components are the dividend yield and the capital gains yield. For most companies, the

capital gains yield is larger. This is easy to see for companies that pay no dividends. For companies

that do pay dividends, the dividend yields are rarely over five percent and are often much less.

10. Yes. If the dividend grows at a steady rate, so does the stock price. In other words, the dividend

growth rate and the capital gains yield are the same.

B-26 SOLUTIONS

Solutions to Questions and Problems

NOTE: All end of chapter problems were solved using a spreadsheet. Many problems require multiple

steps. Due to space and readability constraints, when these intermediate steps are included in this

solutions manual, rounding may appear to have occurred. However, the final answer for each problem is

found without rounding during any step in the problem.

Core Questions

$$1. V(0) = \$3.25/(1.11)_1 + \$3.25/(1.11)_2 + \$3.25/(1.11)_3 + \$3.25/(1 + .11)_4 + \$50/(1.11)_4 = \$43.02$$

$$2. V(0) = \$3.25/(1.11)_1 + \$3.25/(1.11)_2 + \$3.25/(1.11)_3 + \$3.25/(1 + .11)_4 + \$LD/(1.11)_4 = \$50.00$$

$$\$39.92 = LD/(1 + .11)_4$$

$$LD = \$60.60$$

3. $V(0) = [\$2(1.06)/(.12 - .06)][1 - (1.06/1.12)_5] = \8.50
 $V(0) = [\$2(1.06)/(.12 - .06)][1 - (1.06/1.12)_{10}] = \14.96
 $V(0) = [\$2(1.06)/(.12 - .06)][1 - (1.06/1.12)_{30}] = \28.56
 $V(0) = [\$2(1.06)/(.12 - .06)][1 - (1.06/1.12)_{100}] = \35.19
4. $V(0) = \$30 = [D(1.07)/(.14 - .07)][1 - (1.07/1.14)_{10}]$; $D = \$4.18$
5. $V(0) = [\$4.00(1.20)/(.10 - .20)][1 - (1.20/1.10)_{25}] = \374.63
 $V(0) = [\$4.00(1.12)/(.10 - .12)][1 - (1.12/1.10)_{25}] = \127.46
 $V(0) = [\$4.00(1.06)/(.10 - .06)][1 - (1.06/1.10)_{25}] = \64.01
 $V(0) = [\$4.00(1.00)/(.10 - .00)][1 - (1.00/1.10)_{25}] = \36.31
 $V(0) = [\$4.00(0.95)/(.10 + .05)][1 - (0.95/1.10)_{25}] = \24.68
6. $V(0) = [\$1.80(1.062)]/(.1180 - .0620) = \34.14
7. $V(0) = \$60 = \$4.10/(k - .04)$, $k = .04 + 4.10/60 = 10.833\%$
8. $V(0) = \$35 = [\$1.80(1+g)]/(.12 - g)$; $g = 6.52\%$
9. $V(0) = \$48 = D(1)/(.09 - .045)$; $D(1) = \$2.16$
 $D(3) = \$2.16(1.045)_2 = \2.36
10. Retention ratio = $1 - (\$0.75/\$2.20) = .6591$
Sustainable growth rate = $.18(.6591) = 11.86\%$
11. Sustainable growth = $.06 = .17r$; retention ratio = $.3529$
Payout ratio = $1 - .3529 = .6471 = D/EPs = \$1.40/EPs$; $EPs = \$1.40/.6471 = \2.16
P/E = 23, $EPs = \$2.16$, so $V(0) = \$2.16(23) = \49.76
12. $E(R) = .045 + .70(.085) = .1045$ or 10.45%
 $E(R) = .045 + 1.25(.085) = .1513$ or 15.13%
13. $P_0 = \$4.50 + [\$5.00 - (\$4.50 \times .012)]/(0.12 - 0.04) = \60.25
14. $P_0 = \$4.50 + [(\$5.00 \times 1.04) - (\$4.50 \times .012)]/(0.12 - 0.04) = \67.25
- CHAPTER 6 B-27
- Intermediate Questions*
15. $V(0) = [\$1.45(1.25)/(.14 - .25)][1 - (1.25/1.14)_8] + [(1 + .25)/(1 + .14)]_8 [\$1.45(1.07)/(.14 - .07)]$
 $= \$64.26$
16. $V(0) = [\$1.34(1.21)/(.12 - .21)][1 - (1.21/1.12)_{12}] + [(1 + .21)/(1 + .12)]_{12} [\$1.34(1.06)/(.12 - .06)]$
 $= \$87.38$
17. $V(9) = D(10)/(k - g) = \$5/ (.15 - .07) = \62.50
 $V(0) = V(9)/(1.15)_9 = \$62.50/(1.15)_9 = \17.77
18. $D(3) = D(0)(1.25)_3$; $D(4) = D(0)(1.25)_3(1.2)$
 $V(4) = D(4)(1 + g)/(k - g) = D(0)(1.25)_3(1.2)(1.07)/(.13 - .07) = 41.7696D(0)$
 $V(0) = \$62.10 = D(0)\{ (1.25/1.13) + (1.25/1.13)_2 + (1.25/1.13)_3 + [1.35_3(1.2) + 41.7696]/1.14_4 \}$
 $D(0) = \$62.10/\$30.756 = \$2.02$; $D(1) = \$2.02(1.25) = \2.52
19. $V(4) = \$1.50(1.07)/(.14 - .07) = \22.93
 $V(0) = \$9.00/1.14 + \$11.00/1.14_2 + \$7.00/1.14_3 + (\$1.50 + 22.93)/1.14_4 = \$35.55$
20. $V(6) = D(7)/(k - g) = \$3.50(1.065)_7/ (.11 - .065) = \120.87
 $V(3) = \$3.50(1.065)_4/1.14 + \$3.50(1.065)_5/1.14_2 + \$3.50(1.065)_6/1.14_3 + \$120.87/1.14_3 =$
 $\$92.67$
 $V(0) = \$3.50(1.065)/1.19 + \$3.50(1.065)_2/1.19_2 + \$3.50(1.065)_3/1.19_3 + \$92.67/1.19_3 =$
 $\$63.43$
21. P/E ratio: values are: 25.10, 26.26, 27.50, 30.69, 25.29, 28.20 ; average = 27.34
EPS growth rates: 5.88%, 3.70%, 3.57%, 17.24%, 10.29% ; average = 8.14%
Expected share price using P/E = $27.34(\$3.75)(1.0814) = \110.87
P/CFPS: values are: 12.31, 12.52, 12.58, 13.63, 12.74, 15.13 ; average = 13.15
CFPS growth rates = 10.58%; 6.43%, 6.70%, 3.73%, 5.78% ; average = 6.57%
Expected share price using P/CFPS = $13.15(\$7.14)(1.0657) = \100.07
P/S: values are: 1.362, 1.417, 1.389, 1.477, 1.324, 1.592 ; average = 1.427
SPS growth rates: 8.09%, 9.11%, 8.73%, 7.78%, 4.45% ; average = 7.63%

Expected share price = $1.427(\$67.85)(1.0763) = \104.19

A reasonable price range would seem to be \$100 to \$111 per share.

22. $k = .05 + 0.85(.085) = 12.23\%$

Dividend growth rates: 7.27%, 7.63%, 5.51%, 4.48%, 7.14% ; average = 6.41%

$V(2005) = \$1.50(1.0641)^2 / (.1223 - .0641) = \29.19

Notice the last dividend is for 2005. To find the price in 2006, we must use the dividend in 2007 in

the constant perpetual dividend growth model.

B-28 SOLUTIONS

23. P/E ratio: N/A, N/A, N/A, 12,400, 3,366.67, 180.00 ; average = 1,773.33

EPS growth rates: 46.67%, 34.38%, 33.335%, 102.14%, 66.67% ; average = 56.64%

Expected share price using P/E = $1,773.33(\$0.05)(1.5664) = \138.88

P/CFPS: N/A, N/A, N/A, N/A, 2,520.00, 112.50 ; average = 1,318.75

CFPS growth rates: 35.00%, 50.00%, 67.31%, 104.71%, 100.00% ; average = 71.40%

Expected share price using P/CFPS = $1,318.75(\$0.09)(1.7140) = \180.83

P/S: values are 2.250, 4.077, 8.412, 10.722, 4.927, 0.516 ; average = 5.150

SPS growth rates: 62.50%, 30.77%, 14.12%, 5.67%, -14.88% ; average = 19.64%

Expected share price using P/S = $5.150(\$17.45)(1.1964) = \107.52

This price range is from \$107 to \$181! As long as the stellar growth continues, the stock should do

well. But any stumble will likely tank the stock. Be careful out there!

24. P/E ratios and P/CFPS are all negative, so these ratios are unusable.

P/S: values are 25.867, 6.063, 1.127 ; average = 11.019

SPS growth rates = 91.22%, 43.66% ; average = 70.44%

Expected share price using SPS = $11.019(\$10.20)(1.7044) = \191.57

This price is ridiculous, \$192! Notice that sales have been exploding, but the company still can't

make money. The market price of \$11.50 might be fair considering the risks involved. Might be a

buyout candidate, but at what price?

25. Parador's expected future stock price is $\$70 \times 1.14 = \79.80 , and expected future earnings per share

is $\$4.50 \times 1.08 = \4.89 . Thus, Parador's expected future P/E ratio is $\$79.80 / \$4.86 = 16.42$.

26. Parador's expected future stock price is $\$70 \times 1.14 = \79.80 , and expected future sales per share is

$\$23 \times 1.09 = \25.07 . Thus, Parador's expected future P/E ratio is $\$79.80 / \$25.07 = 3.183$.

27. $b = 1 - (\$1.10 / \$2.50) = .56$; $g = 26.50\% \times .56 = 14.84\%$

$k = 3.79\% + 0.85(8\%) = 10.59\%$

$P_0 = \$1.10(1 + .0840) / (.1059 - .1584) = -\29.72

Since the growth rate is higher than required return, the dividend growth model cannot be used.

28. Average stock price: \$49.60, \$43.90, \$40.50, \$42.95, \$44.050

P/E ratio: 26.38, 21.31, 18.33, 18.92, 17.62; Average P/E = 20.51

EPS growth rates: 9.57%, 7.28%, 2.71%, 10.13%; Average EPS growth = 7.43%

P/E price: $20.51(1.0743)(\$2.50) = \55.09

P/CF ratio: 18.72, 15.51, 13.46, 14.08, 12.96; Average P/CF = 14.94

CF growth rates: 6.79%, 6.36%, 1.33%, 11.48%; Average CF growth rate = 6.49%

P/CF price = $14.94(1.0649)(\$3.40) = \54.11

P/S ratios: 4.733, 3.882, 3.253, 3.439, 3.048; Average P/S = 3.671

SPS growth rates: 7.92%, 10.08%, 0.32%, 15.69%; Average SPS growth rate = 8.50%

P/S price = $3.671(1.0850)(\$14.45) = \57.56

29. EPS next year = $\$2.50(1.0840) = \2.71

Book value next year = $\$9.50(1.0840) = \10.30

$V(0) = \$9.50 + [\$2.71 - (\$9.50 \times .1059)] / (0.1059 - 0.0840) = \87.31

30. Clean dividend = $\$2.71 - (\$10.30 - 9.50) = \$1.91$

$V(0) = \$1.91 / (.1059 - .1484) = -\34.38

CHAPTER 6 B-29

31. Based on price ratio analysis, it appears the stock should be priced around \$55. All three ratios give

remarkably consistent prices for Abbott. The constant perpetual growth model and RIM model cannot

be used because the growth rate is greater than the required return.

32. The values for the end of the year are:

Book value = $\$10.85(1.1250) = \12.21

EPS = $\$2.88(1.11) = \3.20

Note, to find the book value in the first year, we can use the following relationship:

$B_2 - B_1 = B_1(1 + g) - B_1 = B_1 + B_1g - B_1 = B_1g$

We will use this relationship to calculate the book value in the following years, so:

$V(0) =$

1.082

$\$3.20 - (\$12.21 - 10.85) + 1.082$

$(\$3.20 \times 1.11) - (\$12.21 \times .1250)$

+ 3

2

1.082

$(\$3.20 \times 1.11) - (\$12.21 \times 1.125 \times .1250)$

+ 4

3 2

1.082

$(\$3.20 \times 1.11) - (\$12.21 \times 1.125 \times .1250)$

+ 4

3

1.082

$\$12.21 \times 1.1250$

+ 4

3 3

1.082

$(\$3.20 \times 1.11 \times 1.06) - (\$12.21 \times 1.1250 \times .0820) / (.0820 - .06)$

$V(0) = \$126.08$

33. ROE = Net income / Equity = $\$80 / \$674 = 11.87\%$; Retention ratio = $1 - \$24 / \$80 = .70$

Sustainable growth = $11.87\%(.30) = 8.3086\%$

34. An increase in the quarterly dividend will decrease the growth rate as it will lower the retention ratio.

A stock split affects none of the components, therefore will have no effect.

35. $V(0) = [\$0.286(1.32) / (.13 - .32)][1 - (1.32/1.14)^2] + [(1 + .32) / (1 + .13)]^2 [\$0.286(1.14) / (.14 - .13)]$

$V(0) = \$44.04$

36. P/E on next year's earnings = $.30 / (.14 - .13) = 30.00$

37. Using the following relationships:

$P_0 = D_1 / k - g$; $DPS_1 = EPS_1(1 - b)$; $g = ROE \times b$; $k = R_f + \beta(MRP)$

The P/E ratio can be re-written as:

$P/E = (1 - b) / \{ [R_f + \beta(MRP)] - (ROE \times b) \}$

a. As the beta increases, the P/E ratio should decrease. The required return increases, decreasing the

present value of the future dividends.

b. As the growth rate increases, the P/E ratio increases.

c. An increase in the payout ratio would increase the P/E ratio. Although b is in the numerator and the

denominator, the effect is greater in the denominator

d. As the market risk premium increases, the P/E ratio decreases. The required return increases,

decreasing the present value of the future dividends.

38. Signaling theory can explain the paradox. If investors believe that the increased dividend is a signal of

no potential growth opportunities for the company, investors may re-evaluate the expected growth

rate of the company. A lower growth rate could offset the higher dividend. It is also possible that

investors believe the company does have potential growth opportunities, but is not exploiting them. In

this case, the growth rate of the company would also be lowered.

Chapter 7

Stock Price Behavior and Market Efficiency

Concept Questions

1. The market is not weak-form efficient.

2. Unlike gambling, the stock market is a positive sum game; everybody can win. Also, speculators

provide liquidity to markets and thus help promote efficiency.

3. The efficient markets paradigm only says, within the bounds of increasingly strong assumptions about

the information processing of investors, that assets are fairly priced. An implication of this is that, on

average, the typical market participant cannot earn excess profits from a particular trading strategy.

However, that does not mean that a few particular investors cannot outperform the market over a

particular investment horizon. Certain investors who do well for a period of time get a lot of attention

from the financial press, but the scores of investors who do not do well over the same period of time

generally get considerably less attention.

4. a. If the market is not weak-form efficient, then this information could be acted on and a profit

earned from following the price trend. Under 2, 3, and 4, this information is fully impounded in

the current price and no abnormal profit opportunity exists.

b. Under 2, if the market is not semistrong form efficient, then this information could be used to buy

the stock “cheap” before the rest of the market discovers the financial statement anomaly. Since 2

is stronger than 1, both imply a profit opportunity exists; under 3 and 4, this information is fully

impounded in the current price and no profit opportunity exists.

c. Under 3, if the market is not strong form efficient, then this information could be used as a profitable trading strategy, by noting the buying activity of the insiders as a signal that the stock is

underpriced or that good news is imminent. Since 1 and 2 are weaker than 3, all three imply a profit opportunity. Under 4, the information doesn’t signal a profit opportunity for traders; pertinent information the manager-insiders may have is fully reflected in the current share

price.

d. Despite the fact that this information is obviously less open to the public and a clearer signal of imminent price gains than is the scenario in part (c), the conclusions remain the same. If the market is strong form efficient, a profit opportunity does not exist. A scenario such as this one is the most obvious evidence against strong-form market efficiency; the fact that such insider trading is also illegal should convince you of this fact.

5. Taken at face value, this fact suggests that markets have become more efficient. The increasing ease with which information is available over the internet lends strength to this conclusion. On the other hand, during this particular period, large-cap growth stocks were the top performers. Value-weighted indexes such as the S&P 500 are naturally concentrated in such stocks, thus making them especially hard to beat during this period. So, it may be that the dismal record compiled by the pros is just a matter of bad luck or benchmark error.

CHAPTER 7 B-31

6. It is likely the market has a better estimate of the stock price, assuming it is semistrong form efficient.

However, semistrong form efficiency only states that you cannot easily profit from publicly available information. If financial statements are not available, the market can still price stocks based upon the available public information, limited though it may be. Therefore, it may have been as difficult to examine the limited public information and make an extra return.

7. Beating the market during any year is entirely possible. If you are able to consistently beat the market, it may shed doubt on market efficiency unless you are taking more risk than the market as a whole or are simply lucky.

8. a. False. Market efficiency implies that prices reflect all available information, but it does not imply certain knowledge. Many pieces of information that are available and reflected in prices are fairly uncertain. Efficiency of markets does not eliminate that uncertainty and therefore does not imply perfect forecasting ability.

b. True. Market efficiency exists when prices reflect all available information. To be efficient in the weak form, the market must incorporate all historical data into prices. Under the semistrong form of the hypothesis, the market incorporates all publicly-available information in addition to the historical data. In strong form efficient markets, prices reflect all publicly and privately available information.

c. False. Market efficiency implies that market participants are rational. Rational people will immediately act upon new information and will bid prices up or down to reflect that information.

d. False. In efficient markets, prices reflect all available information. Thus, prices will fluctuate whenever new information becomes available.

e. True. Competition among investors results in the rapid transmission of new market

information. In efficient markets, prices immediately reflect new information as investors bid the stock price up or down.

9. Yes, historical information is also public information; weak form efficiency is a subset of semi-strong form efficiency.

10. Ignoring trading costs, on average, such investors merely earn what the market offers; they trade all have zero NPV. If trading costs exist, then these investors lose by the amount of the costs.

11. a. Aerotech's stock price should rise immediately after the announcement of the positive news.

b. Only scenario (ii) indicates market efficiency. In that case, the price of the stock rises immediately to the level that reflects the new information, eliminating all possibility of abnormal returns. In the other two scenarios, there are periods of time during which an investor could trade on the information and earn abnormal returns.

12. False. The stock price would have adjusted before the founder's death only if investors had perfect

forecasting ability. The 12.5 percent increase in the stock price after the founder's death indicates that

either the market did not anticipate the death or that the market had anticipated it imperfectly.

However, the market reacted immediately to the new information, implying efficiency. It is interesting that the stock price rose after the announcement of the founder's death. This price behavior

indicates that the market felt he was a liability to the firm.

B-32 SOLUTIONS

13. The announcement should not deter investors from buying UPC's stock. If the market is semi-strong

form efficient, the stock price will have already reflected the present value of the payments that UPC

must make. The expected return after the announcement should still be equal to the expected return

before the announcement. UPC's current stockholders bear the burden of the loss, since the stock

price falls on the announcement. After the announcement, the expected return moves back to its

original level.

14. The market is generally considered to be efficient up to the semi-strong form. Therefore, no

systematic profit can be made by trading on publicly-available information. Although illegal, the lead

engineer of the device can profit from purchasing the firm's stock *before* the news release on the

implementation of the new technology. The price should immediately and fully adjust to the new

information in the article. Thus, no abnormal return can be expected from purchasing after the

publication of the article.

15. Under the semi-strong form of market efficiency, the stock price should stay the same. The

accounting system changes are publicly available information. Investors would identify no changes in

either the firm's current or its future cash flows. Thus, the stock price will not change after

the
announcement of increased earnings.

16. Because the number of subscribers has increased dramatically, the time it takes for information in the newsletter to be reflected in prices has shortened. With shorter adjustment periods, it becomes impossible to earn abnormal returns with the information provided by Durkin. If Durkin is using only publicly-available information in its newsletter, its ability to pick stocks is inconsistent with the efficient markets hypothesis. Under the semi-strong form of market efficiency, all publicly-available information should be reflected in stock prices. The use of private information for trading purposes is illegal.

17. You should not agree with your broker. The performance ratings of the small manufacturing firms were published and became public information. Prices should adjust immediately to the information, thus preventing future abnormal returns.

18. Stock prices should immediately and fully rise to reflect the announcement. Thus, one cannot expect abnormal returns following the announcement.

19. a. No. Earnings information is in the public domain and reflected in the current stock price.

b. Possibly. If the rumors were publicly disseminated, the prices would have already adjusted for the possibility of a merger. If the rumor is information that you received from an insider, you could earn excess returns, although trading on that information is illegal.

c. No. The information is already public, and thus, already reflected in the stock price.

20. The statement is false because every investor has a different risk preference. Although the expected return from every well-diversified portfolio is the same after adjusting for risk, investors still need to choose funds that are consistent with their particular risk level.

21. The share price will decrease immediately to reflect the new information. At the time of the announcement, the price of the stock should immediately decrease to reflect the negative information.

CHAPTER 7 B-33

22. In an efficient market, the cumulative abnormal return (CAR) for Prospectors would rise substantially

at the announcement of a new discovery. The CAR falls slightly on any day when no discovery is announced. There is a small positive probability that there will be a discovery on any given day. If there is no discovery on a particular day, the price should fall slightly because the good event did not

occur. The substantial price increases on the rare days of discovery should balance the small declines

on the other days, leaving CARs that are horizontal over time. The substantial price increases on the rare days of discovery should balance the small declines on all the other days, leaving CARs that are

horizontal over time.

Solutions to Questions and Problems

NOTE: All end of chapter problems were solved using a spreadsheet. Many problems require multiple

steps. Due to space and readability constraints, when these intermediate steps are included in this

solutions manual, rounding may appear to have occurred. However, the final answer for each problem is

found without rounding during any step in the problem.

Core Questions

1. To find the cumulative abnormal returns, we chart the abnormal returns for the days preceding and following the announcement. The abnormal return is calculated by subtracting the market return from

the stock's return on a particular day, $R_i - R_M$. Calculate the cumulative average abnormal return by

adding each abnormal return to the previous day's abnormal return.

Daily Cumulative

Days from Abnormal Abnormal
Announcement Return Return

-5 -0.1 -0.1

-4 0.2 0.1

-3 0.1 0.2

-2 -0.2 0.0

-1 0.0 0.0

0 1.9 1.9

1 -0.2 1.7

2 0.1 1.8

3 -0.1 1.7

4 0.1 1.8

5 -0.1 1.7

B-34 SOLUTIONS

Cumulative Abnormal Returns

-0.5

0.0

0.5

1.0

1.5

2.0

-5 -4 -3 -2 -1 0 1 2 3 4 5

Days from announcement

CAR

Given that the battle with the current CEO was acrimonious, it must be assumed that investors felt

his performance was poor, so we would expect the stock price to increase. The CAR supports the

efficient markets hypothesis. The CAR increases on the day of the announcement, and then remains

relatively flat following the announcement.

2. The diagram does not support the efficient markets hypothesis. The CAR should remain relatively flat

following the announcements. The diagram reveals that the CAR rose in the first month, only to drift

down to lower levels during later months. Such movement violates the semi-strong form of

the efficient markets hypothesis because an investor could earn abnormal profits while the stock price gradually decreased.

3. a. Supports. The CAR remained constant after the event at time 0. This result is consistent with market efficiency, because prices adjust immediately to reflect the new information. Drops in CAR prior to an event can easily occur in an efficient capital market. For example, consider a

sample of forced removals of the CEO. Since any CEO is more likely to be fired following bad rather than good stock performance, CARs are likely to be negative prior to removal.

Because

the firing of the CEO is announced at time 0, one cannot use this information to trade profitably

before the announcement. Thus, price drops prior to an event are neither consistent nor inconsistent with the efficient markets hypothesis.

b. Rejects. Because the CAR increases after the event date, one can profit by buying after the event. This possibility is inconsistent with the efficient markets hypothesis.

c. Supports. The CAR does not fluctuate after the announcement at time 0. While the CAR was

rising before the event, insider information would be needed for profitable trading. Thus, the graph is consistent with the semi-strong form of efficient markets.

d. Supports. The diagram indicates that the information announced at time 0 was of no value. There appears to be a slight drop in the CAR prior to the event day. Similar to part *a*, such movement is neither consistent nor inconsistent with the efficient markets hypothesis (EMH).

Movements at the event date are neither consistent nor inconsistent with the efficient markets

hypothesis.

CHAPTER 7 B-35

4. Once the verdict is reached, the diagram shows that the CAR continues to decline after the court

decision, allowing investors to earn abnormal returns. The CAR should remain constant on average,

even if an appeal is in progress, because no new information about the company is being revealed.

Thus, the diagram is not consistent with the efficient markets hypothesis (EMH).

Intermediate Questions

5. To find the cumulative abnormal returns, we chart the abnormal returns for each of the three

companies for the days preceding and following the announcement. The abnormal return is calculated by subtracting the market return from a stock's return on a particular day, $R_i - R_M$.

Group

the returns by the number of days before or after the announcement for each respective company.

Calculate the cumulative average abnormal return by adding each abnormal return to the previous

day's abnormal return.

Abnormal returns ($R_i - R_M$)

Days from

announcement

Ross

W' field

Jaffe
 Sum
 Average
 abnormal return
 Cumulative
 average residual
 -4 -0.2 -0.2 -0.2 -0.6 -0.2 -0.2
 -3 0.2 -0.1 0.2 0.3 0.1 -0.1
 -2 0.2 -0.2 0.0 0.0 0.0 -0.1
 -1 0.2 0.2 -0.4 0.0 0.0 -0.1
 0 3.3 0.2 1.9 5.4 1.8 1.7
 1 0.2 0.1 0.0 0.3 0.1 1.8
 2 -0.1 0.0 0.1 0.0 0.0 1.8
 3 -0.2 0.1 -0.2 -0.3 -0.1 1.7
 4 -0.1 -0.1 -0.1 -0.3 -0.1 1.6

Cumulative Abnormal Returns

-0.5
 0.0
 0.5
 1.0
 1.5
 2.0
 -4 -3 -2 -1 0 1 2 3 4

Days from announcement
CAR

The market reacts favorably to the announcements. Moreover, the market reacts only on the day of the announcement. Before and after the event, the cumulative abnormal returns are relatively flat. This behavior is consistent with market efficiency.

Chapter 8

Behavioral Finance and the Psychology of Investing

Concept Questions

1. There are three trends at all times, the primary, secondary, and tertiary trends. For a market timer, the secondary, or short-run trend, might be the most important, but, for most investors, it is the primary, or long-run trend that matters.
2. A support area is a price or level below which a stock price or market index is not likely to drop. A resistance area is a price or level above which a stock price or market index is not likely to rise.
3. A correction is movement toward the long-run trend. A confirmation is a signal that the long-run trend has changed direction.
4. The fact that the market is up is good news, but market breadth (the difference between the number of gainers and losers) is negative. To a technical analyst, a market advance on narrow or negative breadth is not a particularly positive event.
5. The Arms (or trin) is a ratio. The numerator has the average number of shares traded in stocks that were down for the day; the denominator has the average number of shares traded that were up for the

day. It indicates whether trading is heavier in down or up issues.

6. If the market is efficient, then market timing is a bad idea. Trying to time the market will only mean

that over a long period, the investor will underperform a strategy that stays fully invested. A timing

strategy will incur significant costs and, likely, taxes as well.

7. At the time the theory was developed, large companies in the U.S. were either involved in the

manufacturing of goods or the transportation of them (primarily railroads). The basic idea behind the

Dow theory is that these activities are fundamentally related, so the two averages must move in the

same direction over time.

8. The least likely limit to arbitrage is firm-specific risk. For example, in the 3Com/Palm case, the stocks

are perfect substitutes after accounting for the exchange ratio. An investor could invest in a risk

neutral portfolio by purchasing the underpriced asset and selling the overpriced asset. When the

prices of the assets revert to an equilibrium, the positions could be closed.

9. A contrarian investor goes against the crowd. For example, when investors are bullish, a contrarian

would argue the market is overbought and short sell. Conversely, when investors are pessimistic, a

contrarian would begin purchasing stocks.

10. Consider support and resistance lines. If it is agreed the resistance line is \$90, what would a rational

investor do when the stock price reaches \$89 (or some other suitable close price)? The investor would

sell the stock. This means the new resistance line is \$89. Now, an investor would sell at \$88. This

logic implies the support and resistance lines would collapse on each other.

CHAPTER 8 B-37

11. An up gap, where the low stock price today is higher than the high stock price from the previous day,

is a bullish signal. A down gap, where the high price today is lower than the low price from the

previous day is a bearish signal. Of course, gap traders also believe that the stock must eventually

“cover the gap”, that is, trade in the stock price the gap missed.

12. As long as it is a fair coin the probability in both cases is 50 percent as coins have no memory.

Although many believe the probability of flipping a tail would be greater given the long run of heads,

this is an example of the gambler’s fallacy.

13. Prospect theory argues that investors are willing to take more risk to avoid the loss of a dollar than

they are to make a dollar profit. Also, if an investor has the choice between a sure gain and a gamble

that could increase or decrease the sure gain, the investor is likely to choose the sure gain.

The focus

on gains and losses, combined with the tendency of investors to be risk-averse with regard to gains,

but risk-taking when it comes to losses, is the essence of prospect theory. A fully rational

investor (in an economic sense) is presumed to only care about his or her overall wealth, not the gains and losses associated with individual pieces of that wealth.

14. Frame dependence is the argument that an investor's choice is dependent on the way the question is posed. An investor can frame a decision problem in broad terms (like wealth) or in narrow terms (like gains and losses). Broad and narrow frames often lead the investor to make different choices. While it is human nature to use a narrow frame (like gains and losses), doing so can lead to irrational decisions. Using broad frames, like overall wealth, results in better investment decisions.

15. A noise trader is someone whose trades are not based on information or financially meaningful analysis. Noise traders could, in principle, act together to worsen a mispricing in the short-run. Noise trader risk is important because the worsening of a mispricing could force the arbitrageur to liquidate early and sustain steep losses.

Solutions to Questions and Problems

NOTE: All end of chapter problems were solved using a spreadsheet. Many problems require multiple steps. Due to space and readability constraints, when these intermediate steps are included in this

solutions manual, rounding may appear to have occurred. However, the final answer for each problem is

found without rounding during any step in the problem.

Core Questions

1. Adv./Dec. Cumulative

Monday 734 734

Tuesday 622 1,356

Wednesday 294 1,650

Thursday 516 2,166

Friday 597 2,763

2. Arms ratio

Monday 0.822

Tuesday 0.947

Wednesday 1.035

Thursday 1.004

Friday 0.771

B-38 SOLUTIONS

3. AMZN DIS

February \$- \$-

March \$- \$-

April \$33.94 \$27.69

May \$34.05 \$27.52

June \$33.65 \$26.34

July \$37.92 \$26.09

August \$40.31 \$25.34

September \$44.38 \$24.99

October \$42.62 \$24.56

November \$44.38 \$24.52

4. AMZN DIS

February \$- \$-

March \$- \$-
April \$33.15 \$27.05
May \$34.78 \$27.48
June \$33.37 \$25.76
July \$41.53 \$25.86
August \$41.51 \$25.26
September \$44.84 \$24.56
October \$41.24 \$24.47
November \$46.19 \$24.78

5. AMZN DIS

February \$- \$-
March \$- \$-
April \$33.54 \$27.37
May \$34.41 \$27.50
June \$33.51 \$26.05
July \$39.73 \$25.98
August \$40.91 \$25.30
September \$44.61 \$24.77
October \$41.93 \$24.52
November \$45.29 \$24.65

CHAPTER 8 B-39

6. MSI

1 0.5200
2 0.5333
3 0.4733
4 0.5467
5 0.5800

If the MSI is used as a contrarian indicator, the market appears to be headed upward, although the indicator is relatively neutral at the moment.

7. Price Up/Down

Price times

Volume

Positive Money

Flow

Negative Money

Flow

Net Money

Flow

\$84.12

\$84.16 + \$420,800.00 \$420,800.00

\$84.15 - \$201,960.00 \$201,960.00

\$84.17 + \$151,506.00 \$572,306.00

\$84.19 + \$286,246.00 \$858,552.00

\$84.23 + \$143,191.00 \$1,001,743.00

\$84.20 - \$387,320.00 \$589,280.00

Money flow at the end of the day \$412,463.00

In this case, the money flow is a bullish signal.

8. Simple Exponential

8-Nov-05 - -

9-Nov-05 - -

10-Nov-05 1,223.40 1,227.18

11-Nov-05 1,228.78 1,231.75

14-Nov-05 1,233.15 1,233.45

15-Nov-05 1,232.50 1,230.75
16-Nov-05 1,231.33 1,231.27
17-Nov-05 1,234.34 1,238.57
18-Nov-05 1,240.76 1,244.52
21-Nov-05 1,248.64 1,251.75

The reason to calculate the moving average on an index is the same for an individual stock.

It can

give an indication of whether the market as a whole is moving upward or downward compared to its

recent past. If the index closed above the 3-day moving average, it would be a buy indicator.

9. There appears to be a support level at \$17 and a resistance level at \$20. A support level is a level

below which the stock or market is unlikely to go. A resistance level is a level above which the stock

or market is likely to rise.

B-40 SOLUTIONS

10. Adv./Dec. Cumulative Arms ratio

Monday -1,073 -1,073 0.626

Tuesday -816 -1,889 0.984

Wednesday -527 -2,416 0.964

Thursday -114 -2,530 0.906

Friday -326 -2,856 1.001

11. Price Up/Down

Price times

Volume

Positive Money

Flow

Negative Money

Flow

Net Money

Flow

\$43.87

\$43.89 + \$70,224.00 \$70,224.00

\$43.88 - \$52,656.00 \$52,656.00

\$43.90 + \$26,340.00 \$96,564.00

\$43.90 \$61,460.00

\$43.88 - \$48,268.00 \$100,924.00

\$43.86 - \$35,088.00 \$136,012.00

\$43.84 - \$56,992.00 \$193,004.00

\$43.83 - \$61,362.00 \$254,366.00

\$43.82 - \$43,820.00 \$298,186.00

Money flow at the end of the day -\$201,622.00

Intermediate Questions

12. Primary support = $\$95 - [(\$95 - 78)(.382)] = \$88.51$

Secondary support = $\$95 - [(\$95 - 78)(.618)] = \$84.49$

13. 3-day 5-day

31-Oct-05 \$- \$-

1-Nov-05 \$- \$-

2-Nov-05 \$40.32 \$-

3-Nov-05 \$40.97 \$-

4-Nov-05 \$41.40 \$40.82

7-Nov-05 \$41.67 \$41.27

8-Nov-05 \$41.92 \$41.68

9-Nov-05 \$42.08 \$41.88

10-Nov-05 \$42.56 \$42.23
11-Nov-05 \$43.09 \$42.69
14-Nov-05 \$43.58 \$43.02
15-Nov-05 \$43.49 \$43.17
16-Nov-05 \$43.04 \$43.26
17-Nov-05 \$43.13 \$43.36
18-Nov-05 \$43.67 \$43.52

CHAPTER 8 B-41

14. 3-day 5-day

31-Oct-05 \$- \$-
1-Nov-05 \$- \$-
2-Nov-05 \$40.70 \$-
3-Nov-05 \$41.26 \$-
4-Nov-05 \$41.49 \$41.26
7-Nov-05 \$41.77 \$41.62
8-Nov-05 \$42.11 \$42.04
9-Nov-05 \$42.08 \$42.00
10-Nov-05 \$42.94 \$42.86
11-Nov-05 \$43.49 \$43.39
14-Nov-05 \$43.55 \$43.32
15-Nov-05 \$43.27 \$43.10
16-Nov-05 \$42.79 \$42.84
17-Nov-05 \$43.47 \$43.62
18-Nov-05 \$44.17 \$44.19

\$40.50

\$41.00

\$41.50

\$42.00

\$42.50

\$43.00

\$43.50

\$44.00

30-Oct-05 4-Nov-05 9-Nov-05 14-Nov-05 19-Nov-05

3-day

5-day

B-42 SOLUTIONS

15. Week Put/Call Ratio

1 0.7241

2 1.0230

3 0.9356

4 0.8310

The put/call ratio is a measure of investor sentiment about the future direction of the market.

Puts are

a bet that the market (or stock) will move down and calls are a bet the market (or stock) will move

upwards. The put/call ratio is the number of down bets divided by the number of up bets. A ratio

greater than one indicates more investors believe the market (or stock) will move down than the

number of investors who believe the market will move up. It is a bearish signal. From these numbers,

it appears more investors believe the market will move down in the future. Of course, there are

caveats. First, the put/call ratio can be used as a contrarian indicator. Second, even though a

large
number of calls may indicate that investors believe the stock (or market) will increase in
value,
options are a derivative asset. So, there is another investor selling the call for a premium
believing he
will lose money on the transaction.

\$41.00

\$41.50

\$42.00

\$42.50

\$43.00

\$43.50

\$44.00

\$44.50

30-Oct-05 4-Nov-05 9-Nov-05 14-Nov-05 19-Nov-05

3-day

5-day