CASE

Gilbert Enterprises

Tom Gilbert, founder and chairman of the board of Gilbert Enterprises, could not believe his eyes as he read the quote about his firm in *The Wall Street Journal*. The stock had closed at 35 1/4, down 3 3/4 points for the week. He called his Vice President of Finance, Jane Arnold, and they agreed to meet on Saturday morning at 9:00 a.m. for breakfast.

When Jane arrived, they reviewed the stock's performance for the last few months. Although the stock opened the year (2006) at 28 ½ per share, it had reached a high of 50 in March, but had steadily slid in value to its current level of 35 1/4 in mid-May. Tom and Jane both thought the stock was undervalued in the marketplace and were seriously considering an announcement that the firm was going to repurchase up to one million of its own shares in the open market beginning on June 1st of 2006. They thought that would send a message to investors that the market had placed the stock at an unrealistically low level.

Before taking any action, they decided to consult with their investment banking representative, Albert Roth, senior vice president at the investment banking firm of Baker, Green and Roth. Roth had aided the firm in initially selling its stock to the public (going public) five years ago and was quite familiar with its operations. Although he was surprised to receive their call during an early Saturday morning round of golf at the country club, he promised to get back with them in the next few days with his recommendations on a stock repurchase.

The Firm's Business

Gilbert Enterprises was the third largest firm in the auto parts replacement industry, specializing in brake parts, power transmissions, batteries, cables and other products related to used automobiles. Although most auto industry advertising relates to flashy new cars, Albert Roth knew that the auto parts replacement industry was becoming increasingly important.

His research indicated that the average age of an automobile life had reached eight years in 2006, up from a mere 6.8 years in the mid-1980's. Why? New vehicle price increases had far surpassed the rise in consumer income. People are

now forced to keep their old cars longer whether they want to or not. Furthermore, the Clean Air Act of 1990 (and other legislation) has mandated more emission inspections and maintenance programs. Consumers are now being forced to spend more money to update older automobiles to meet these standards.

Valuation

Gilbert Enterprises had the most advanced just-in-time (JIT) inventory management system in the industry. For that reason, Albert Roth believed the firm would enjoy supernormal growth beyond industry standards for the next three years. His best estimate was that a 15 percent growth rate during that time period was entirely reasonable. After that time span, a more normal growth rate of 6 percent was expected. Because of the supernormal growth potential, he decided to consult Appendix 10B of the [redacted] attached [redacted] to compute the value. Current dividends (D_o) were 1.20 per share and he decided to use a discount or required rate of return (K_e) of 10 percent.

He discussed this approach with his partners and while they generally agreed, they suggested that he also consider a more traditional approach of comparing the firm's price-earnings ratio to other firms in the industry. Price-earnings data along with other information are shown in Figure 1 for Gilbert Enterprises and three other firms in the industry.

Figure 1

Comparative Data for Auto Parts Replacement Firms

	Gilbert Enterprises	*Reliance Parts*	*Standard Auto*	*Allied Motors*
Annual Growth in EPS (last 5 years)	12%	8%	7%	9%
Return on Stockholders' Equity	18.0%	25.3%	14.0%	15.3%
Return on Total Assets	12.1%	8.1%	10.5%	9.8%
Debt to Total Assets	33%	68%	25%	36%
Market Value	$35.25	$70.50	$24.25	$46.75
Book Value	$16.40	$50.25	$19.50	$50.75
Replacement Value	$43.50	$68.75	$26.00	$37.50
Dividend Yield	3.40%	2.18%	5.26%	3.12%
P/E ratio	16.8	24.1	14.2	18.1

Required

1. Using the approach for the valuation of a supernormal growth firm as shown in ~~Appendix 10C of the textbook,~~ the attachment compute the value of Gilbert Enterprises' stock. Round all values in the computation to two places to the right of the decimal point. Does the firm appear to be under or overvalued?
2. Examine the data in Figure 1 and indicate whether the firm's P/E ratio appears to be appropriate in light of other firms in the industry.
3. Based on the answers to questions 1 and 2, what recommendation would you suggest that Albert Roth make?

Raad, Elias, and Robert Ryan. "Capital Structure and Ownership Distribution of Tender Offer Targets: An Empirical Study." *Financial Management* 25 (Spring 1995), pp. 46–57.

Sinquefield, Rex A. "Are Small-Stock Returns Achievable?" *Financial Analysts Journal* 47 (January–February 1991), pp. 45–50.

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APPENDIX 10A

The Bond Yield to Maturity Using Interpolation

We will use a numerical example to demonstrate this process. Assume a 20-year bond pays $118 per year (11.8 percent) in interest and $1,000 after 20 years in principal repayment. The current price of the bond is $1,085. We wish to determine the yield to maturity or discount rate that equates the future flows with the current price.

Since the bond is trading above par value at $1,085, we can assume the yield to maturity must be below the quoted interest rate of 11.8 percent (the yield to maturity would be the full 11.8 percent at a bond price of $1,000). As a first approximation, we will try 10 percent. Annual analysis is used.

Present Value of Interest Payments—

$$PV_A = A \times PV_{IFA} \quad (n = 20, i = 10\%) \qquad \text{(Appendix D)}$$
$$PV_A = \$118 \times 8.514 = \$1{,}004.65$$

Present Value of Principal Payment at Maturity—

$$PV = FV \times PV_{IF} \quad (n = 20, i = 10\%) \qquad \text{(Appendix B)}$$
$$PV = \$1{,}000 \times .149 = \$149$$

Total Present Value—

Present value of interest payments	$1,004.65
Present value of principal payment at maturity	149.00
Total present value, or price, of the bond	$1,153.65

The discount rate of 10 percent gives us too high a present value in comparison to the current bond price of $1,085. Let's try a higher discount rate to get a lower price. We will use 11 percent.

Present Value of Interest Payments—

$$PV_A = A \times PV_{IFA} \quad (n = 20, i = 11\%) \qquad \text{(Appendix D)}$$
$$PV_A = \$118 \times 7.963 = \$939.63$$

Present Value of Principal Payment at Maturity—

$$PV = FV \times PV_{IF} \quad (n = 20, i = 11\%) \qquad \text{(Appendix B)}$$
$$PV = \$1{,}000 \times .124 = \$124$$

APPENDIX 10A

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Total Present Value—

Present value of interest payments	$ 939.63
Present value of principal payment at maturity	124.00
Total present value, or price, of the bond	$1,063.63

The discount rate of 11 percent gives us a value slightly lower than the bond price of $1,085. The rate for the bond must fall between 10 and 11 percent. Using linear interpolation, the answer is 10.76 percent.

$1,153.65 PV @ 10%	$1,153.65 PV @ 10%
1,063.63 PV @ 11%	1,085.00 bond price
$ 90.02	$ 68.65

$$10\% + \frac{\$68.65}{\$90.02}(1\%) = 10\% + .76(1\%) = 10.76\%$$

Problem
Yield to maturity and interpolation

10A–1. Bonds issued by the Peabody Corporation have a par value of $1,000, are selling for $890, and have 18 years to maturity. The annual interest payment is 8 percent.

Find yield to maturity by combining the trial-and-error approach with interpolation, as shown in this appendix. (Use an assumption of annual interest payments.)

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APPENDIX 10B

Valuation of a Supernormal Growth Firm

The equation for the valuation of a supernormal growth firm is:

$$P_0 = \sum_{t=1}^{n} \frac{D_t}{(1+K_e)^t} + P_n\left(\frac{1}{1+K_e}\right) \qquad (10\text{–}B1)$$

(Supernormal growth period) (After supernormal growth period)

The formula is not difficult to use. The first term calls for determining the present value of the dividends using the supernormal growth period. The second term calls for computing the present value of the future stock price as determined at the end of the supernormal growth period. If we add the two, we arrive at the current stock price. We are adding together the two benefits the stockholder will receive: a future stream of dividends during the supernormal growth period and the future stock price.

Let's assume the firm paid a dividend over the last 12 months of $1.67; this represents the current dividend rate. Dividends are expected to grow by 20 percent per year over the supernormal growth period (n) of three years. They will then grow at a normal constant growth rate (g) of 5 percent. The required rate of return (discount rate) as

represented by K_e is 9 percent. We first find the present value of the dividends during the supernormal growth period.

1. Present Value of Supernormal Dividends—

D_0 = \$1.67. We allow this value to grow at 20 percent per year over the three years of supernormal growth.

$D_1 = D_0(1 + .20) = \$1.67(1.20) = \$2.00$

$D_2 = D_1(1 + .20) = \$2.00(1.20) = \$2.40$

$D_3 = D_2(1 + .20) = \$2.40(1.20) = \$2.88$

We then discount these values back at 9 percent to find the present value of dividends during the supernormal growth period.

	Supernormal Dividends	Discount Rate K_e = 9%	Present Value of Dividends during the Supernormal Period
D_1	\$2.00	.917	\$1.83
D_2	2.40	.842	2.02
D_3	2.88	.772	2.22
			\$6.07

The present value of the supernormal dividends is \$6.07. We now turn to the future stock price.

2. Present Value of Future Stock Price—

We first find the future stock price at the end of the supernormal growth period. This is found by taking the present value of the dividends that will be growing at a normal, constant rate after the supernormal period. This will begin *after* the third (and last) period of supernormal growth.

Since after the supernormal growth period the firm is growing at a normal, constant rate (g = 5 percent) and K_e (the discount rate) of 9 percent exceeds the new, constant growth rate of 5 percent, we have fulfilled the two conditions for using the constant dividend growth model after three years. That is, we can apply Formula 10–9 (without subscripts for now).

$$P = \frac{D}{K_e - g}$$

In this case, however, D is really the dividend at the end of the fourth period because this phase of the analysis starts at the beginning of the fourth period and D is supposed to fall at the *end* of the first period of analysis in the formula. Also the price we are solving for now is the price at the beginning of the fourth period, which is the same concept as the price at the end of the third period (P_3).

We thus say:

$$P_3 = \frac{D_4}{K_e - g} \qquad (10B\text{–}2)$$

D_4 is equal to the previously determined value for D_3 of $2.88 compounded for one period at the constant growth rate of 5 percent.

$$D_4 = \$2.88(1.05) = \$3.02$$

Also:

$K_e = .09$ discount rate (required rate of return)
$g = .05$ constant growth rate

$$P_3 = \frac{D_4}{K_e - g} = \frac{\$3.02}{.09 - .05} = \frac{\$3.02}{.04} = \$75.50$$

This is the value of the stock at the end of the third period. We discount this value back to the present.

Stock Price after Three Years	Discount Rate* $K_e = 9\%$	Present Value of Future Price
$75.50	.772	$58.29

*Note: n is equal to 3.

The present value of the future stock price (P_3) of $75.50 is $58.29.

By adding together the answers in parts (1) and (2) of this appendix, we arrive at the total present value, or price, of the supernormal growth stock.

(1) Present value of dividends during the supernormal growth period	$ 6.07
(2) Present value of the future stock price	58.29
Total present value, or price	$64.36

The process is also illustrated in Figure 10B–1 below.

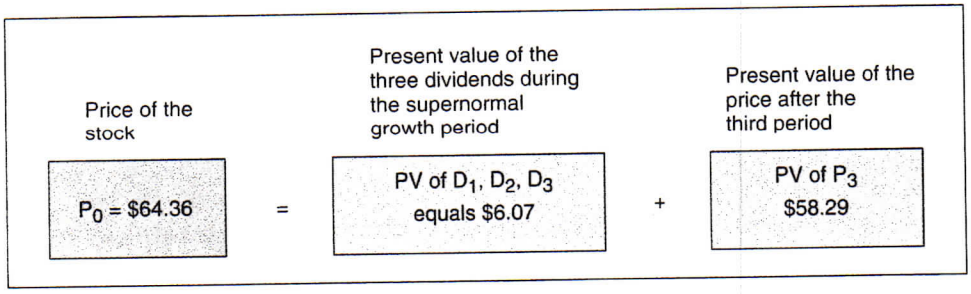

FIGURE 10B–1
Stock valuation under supernormal growth analysis

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