Constant Growth (Gordon) Model
Used to find the value of a constant growth stock.

The last term of Equation 8-2 is called the **constant growth model,** or the **Gordon model** after Myron J. Gordon, who did much to develop and popularize it.

ILLUSTRATION OF A CONSTANT GROWTH STOCK

Assume that Allied Food Products just paid a dividend of \$1.15 (that is, $D_0 = \$1.15$). Its stock has a required rate of return, k_s, of 13.4 percent, and investors expect the dividend to grow at a constant 8 percent rate in the future. The estimated dividend one year hence would be $D_1 = \$1.15(1.08) = \$1.24$; D_2 would be \$1.34; and the estimated dividend five years hence would be \$1.69:

$$D_5 = D_0(1 + g)^5 = \$1.15(1.08)^5 = \$1.69.$$

We could use this procedure to estimate all future dividends, then use Equation 8-1 to determine the current stock value, $\hat{P}_0$. In other words, we could find each expected future dividend, calculate its present value, and then sum all the present values to find the intrinsic value of the stock.

Such a process would be time consuming, but we can take a short cut—just insert the illustrative data into Equation 8-2 to find the stock's intrinsic value, \$23:

$$\hat{P}_0 = \frac{\$1.15(1.08)}{0.134 - 0.08} = \frac{\$1.242}{0.054} = \$23.00.$$

Note that a necessary condition for the derivation of Equation 8-2 is that $k_s > g$. If the equation is used in situations where k_s is not greater than g, the results will be both wrong and meaningless.

The concept underlying the valuation process for a constant growth stock is graphed in Figure 8-1. Dividends are growing at the rate $g = 8\%$, but because $k_s > g$, the present value of each future dividend is declining. For example, the dividend in Year 1 is $D_1 = D_0(1 + g)^1 = \$1.15(1.08) = \$1.242$. However, the present value of this dividend, discounted at 13.4 percent, is $PV(D_1) = \$1.242/(1.134)^1 = \$1.095$. The dividend expected in Year 2 grows to $\$1.242(1.08) = \$1.341$, but the present value of this dividend falls to \$1.043. Continuing, $D_3 = \$1.449$ and $PV(D_3) = \$0.993$, and so on. Thus, the expected dividends are growing, but the present value of each successive dividend is declining, because the dividend growth rate (8%) is less than the rate used for discounting the dividends to the present (13.4%).

If we summed the present values of each future dividend, this summation would be the value of the stock, $\hat{P}_0$. When g is a constant, this summation is equal to $D_1/(k_s - g)$, as shown in Equation 8-2. Therefore, if we extended the lower step function curve in Figure 8-1 on out to infinity and added up the present values of each future dividend, the summation would be identical to the value given by Equation 8-2, \$23.00.

DIVIDEND AND EARNINGS GROWTH

Growth in dividends occurs primarily as a result of growth in *earnings per share (EPS)*. Earnings growth, in turn, results from a number of factors, including (1) inflation, (2) the amount of earnings the company retains and reinvests, and (3) the rate of return the company earns on its equity (ROE). Regarding inflation, if output (in