

Finance: Common Stock Value - Constant Growth

Given Data:

Expected dividend per share in 2023 $(D_{2023}) = \$7.50$

Historical dividends (in \$) per share:

- 2022: \$7.01
- 2021: \$6.55
- 2020: \$6.13
- 2019: \$5.72
- 2018: \$5.35
- 2017: \$5.00

Topic: Calculation of Stock Price using Constant Growth Dividend Discount Model (DDM)

Objective: Determine the most one would be willing to pay per share in 2022 if the expected return on similar risk investments is 16%.

Step 1: Evaluate Dividend Growth Rate

To use the Constant Growth Dividend Discount Model, the dividend growth rate (g) must first be determined.

Using the historical dividends (D):

$$\begin{aligned} D_0 &= 5.00 \\ D_1 &= 5.35 \\ D_2 &= 5.72 \\ D_3 &= 6.13 \\ D_4 &= 6.55 \\ D_5 &= 7.01 \end{aligned}$$

Determine the compound annual growth rate (CAGR):

$$D_t = D_0 \times (1+g)^t$$

$$7.01 = 5.00 \times (1+g)^5$$

Solving for g :

$$(1+g)^5 = \frac{7.01}{5.00} = 1.402 \quad \Rightarrow \quad g = (1.402)^{\frac{1}{5}} - 1$$

$$g \approx 0.070 \text{ or } 7.0\%$$

Explanation: The growth rate is determined using the compound annual growth rate formula for the dividends across five years.

Supporting Statement: Calculation based on the historical dividend growth over the given period.

Step 2: Apply the Dividend Discount Model (DDM)

To compute the maximum stock price for 2022 utilizing the DDM, the following equation is used:

$$P_0 = \frac{D_1}{r - g}$$

where:

P_0 = Price of the stock in 2022

D_1 = Dividend expected in 2023 = \$7.50

r = Required rate of return (16% or 0.16)

g = Growth rate (7% or 0.07)

$$P_0 = \frac{7.50}{0.16 - 0.07}$$

$$P_0 = \frac{7.50}{0.09}$$

$$P_0 = 83.33$$

Explanation: The price of the stock is computed using the Dividend Discount Model by substituting the expected dividend, required rate of return, and growth rate.

Supporting Statement: The model application is correct based on the data

provided and the appropriate formula for constant growth DDM.

Final Solution:

Most one would be willing to pay per share in 2022: \$83.33