



Managerial Finance

Hussain A. Al Awami, B.Sc. Pharm., M.Sc. MBA



Chapter VII problem solving

Problem 7-1

- \$1.5 per share
- Growth is expected to be 5% for next 3 years, and then 10% a year
- What is the expected dividends for the next 5 year?

Answer

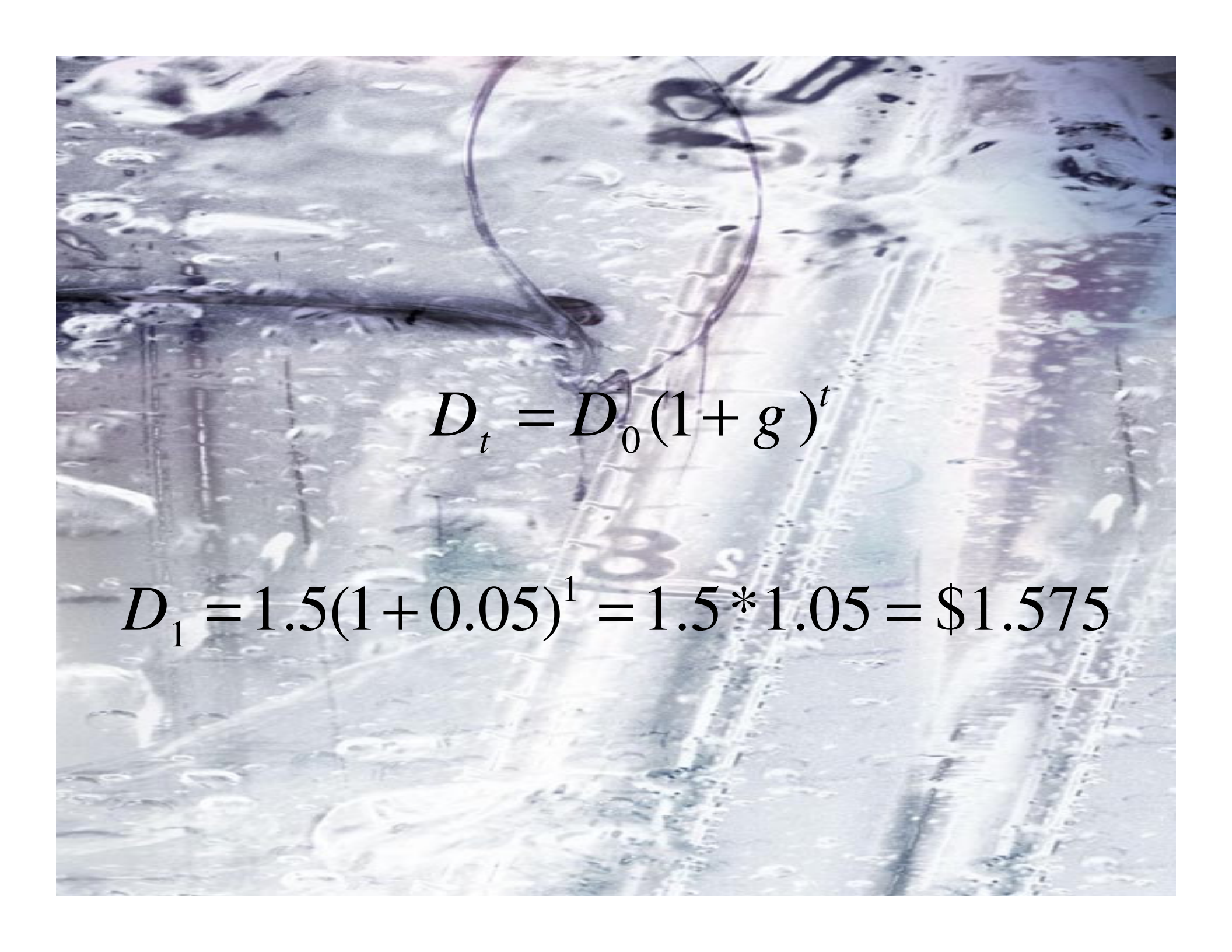
$$D_t = D_0(1 + g)^t$$

Year t

Expected growth rate

Last dividend received

Dividend at year t

An aerial photograph of a river with a dam and a bridge. The river flows from the top left towards the bottom right. A dam is visible in the middle ground, and a bridge spans across the river. The water is dark, and the surrounding land is green and brown. The text is overlaid on the image.
$$D_t = D_0(1 + g)^t$$

$$D_1 = 1.5(1 + 0.05)^1 = 1.5 * 1.05 = \$1.575$$


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

$$D_2 = 1.5(1 + 0.05)^2 = 1.5 * 1.1025 = \$1.65375$$

$$D_3 = 1.5(1 + 0.05)^3 = 1.5 * 1.1576 = \$1.7364$$


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

$$D_4 = 1.5(1+0.05)^3(1+0.1)^1 = 1.5 * 1.1576 * 1.1 = \$1.9101$$

$$D_5 = 1.5(1+0.05)^3(1+0.1)^2 = 1.5 * 1.1576 * 1.21 = \$2.101$$

Problem 7-2

- Expected dividend is \$0.5
- Expected growth is 7%
- Required rate of return is 15%
- What is the stock value?

Answer

$$\hat{P}_0 = \frac{D_1}{r_s - g}$$

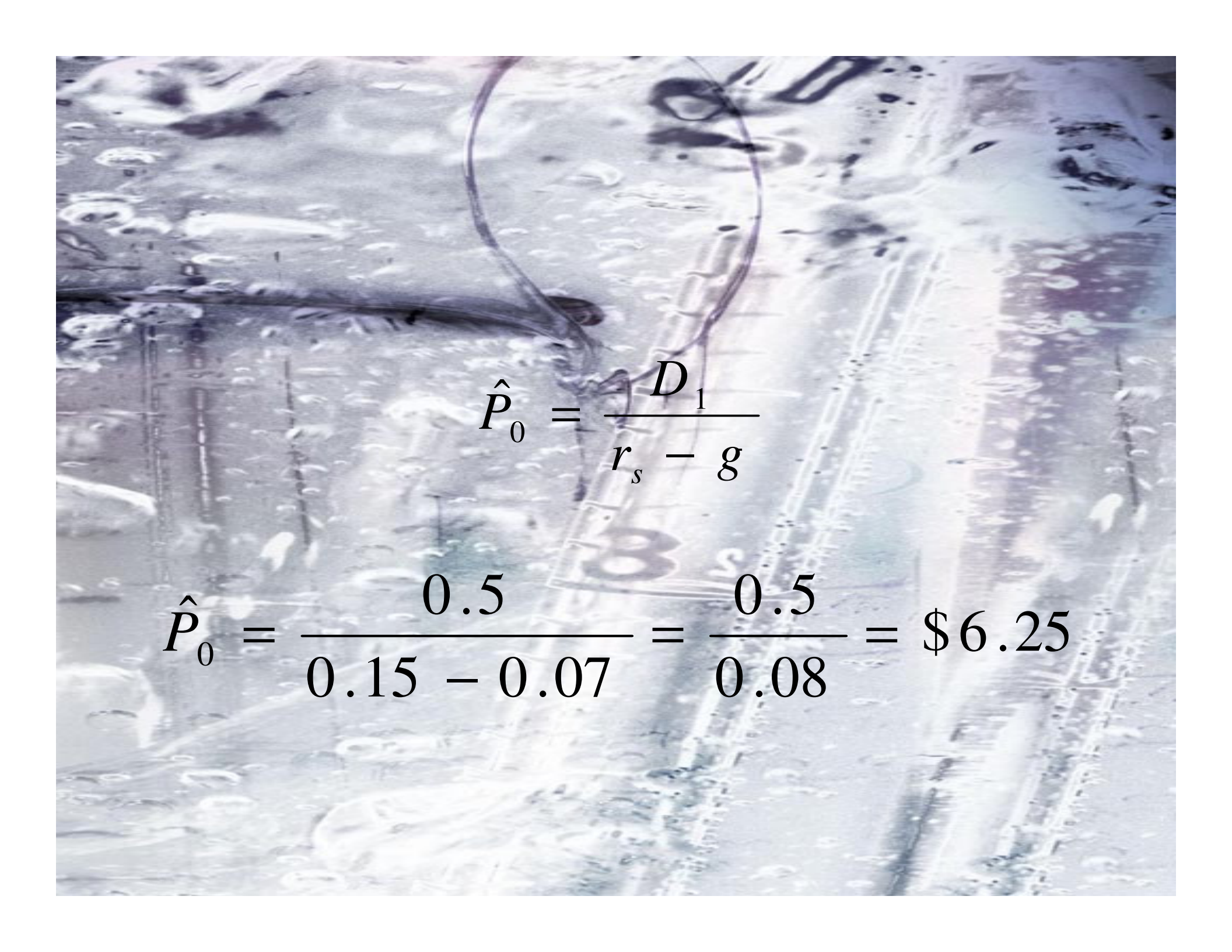
Expected price now

Expected next dividends

Required rate of return

Expected growth

The diagram shows the Gordon Growth Model equation $\hat{P}_0 = \frac{D_1}{r_s - g}$ centered on a background of water ripples. Four red arrows with black outlines point to the variables in the equation: one points from the left to \hat{P}_0 with the label 'Expected price now'; one points from the right to D_1 with the label 'Expected next dividends'; one points from below to r_s with the label 'Required rate of return'; and one points from below to g with the label 'Expected growth'.


$$\hat{P}_0 = \frac{D_1}{r_s - g}$$

$$\hat{P}_0 = \frac{0.5}{0.15 - 0.07} = \frac{0.5}{0.08} = \$6.25$$

Problem 7-3

- Current stock price is \$20
- Paid dividends is \$1
- Expected growth is 10%
- What is price after one year? What is the required rate of return?

Answer

$$\hat{P}_1 = P_0 (1 + g)$$

$$= \$20 (1 + 0.1) = \$20 * 1.1 = \$22$$

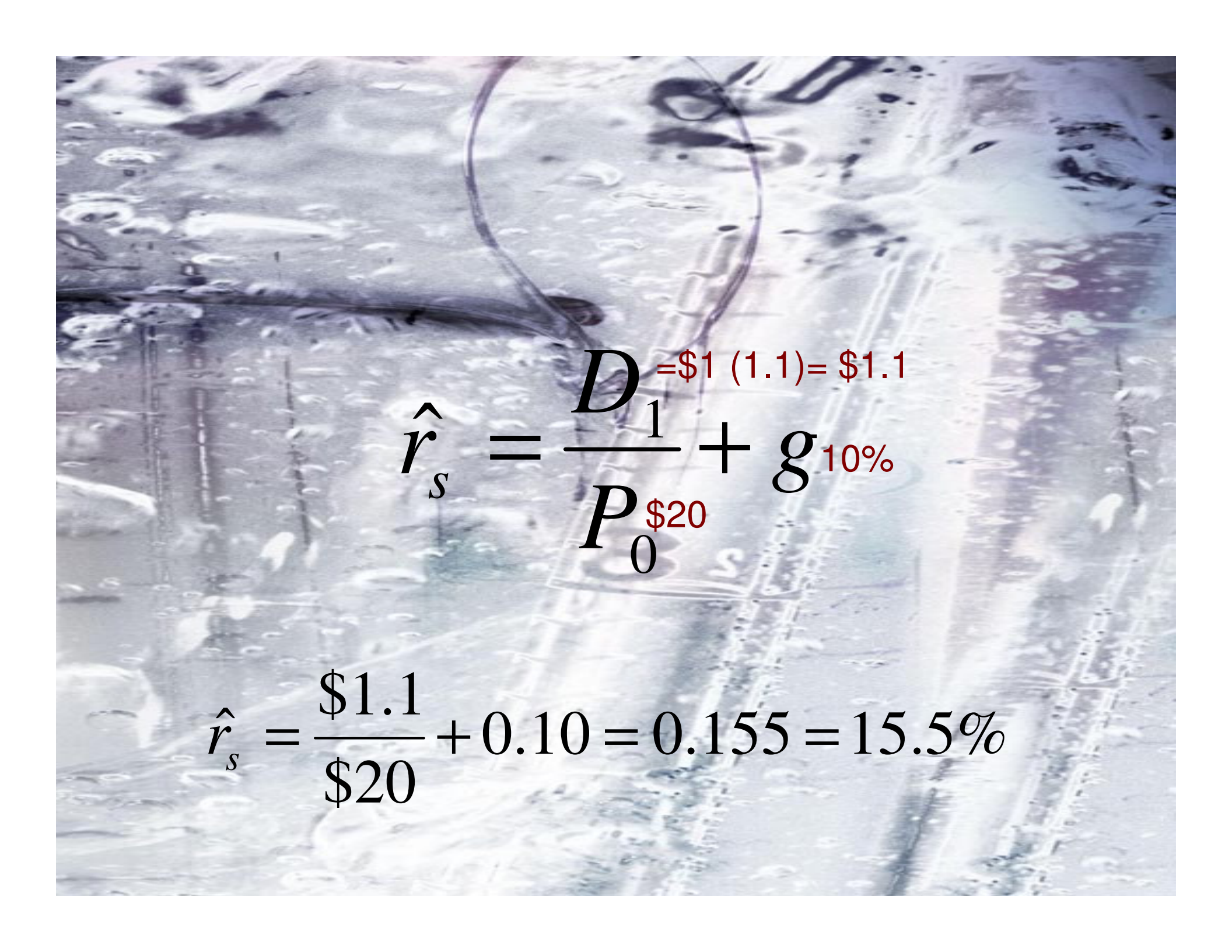
Expected
Next dividend

Expected rate
of return

$$\hat{r}_s = \frac{D_1}{P_0} + g$$

Expected
growth

Current price

An aerial photograph of a river with a dam and a bridge. The river flows from the top left towards the bottom right. A dam is visible in the middle ground, and a bridge spans across the river in the foreground. The water is dark, and the surrounding land is green and brown.
$$\hat{r}_s = \frac{D_1}{P_0} + g$$

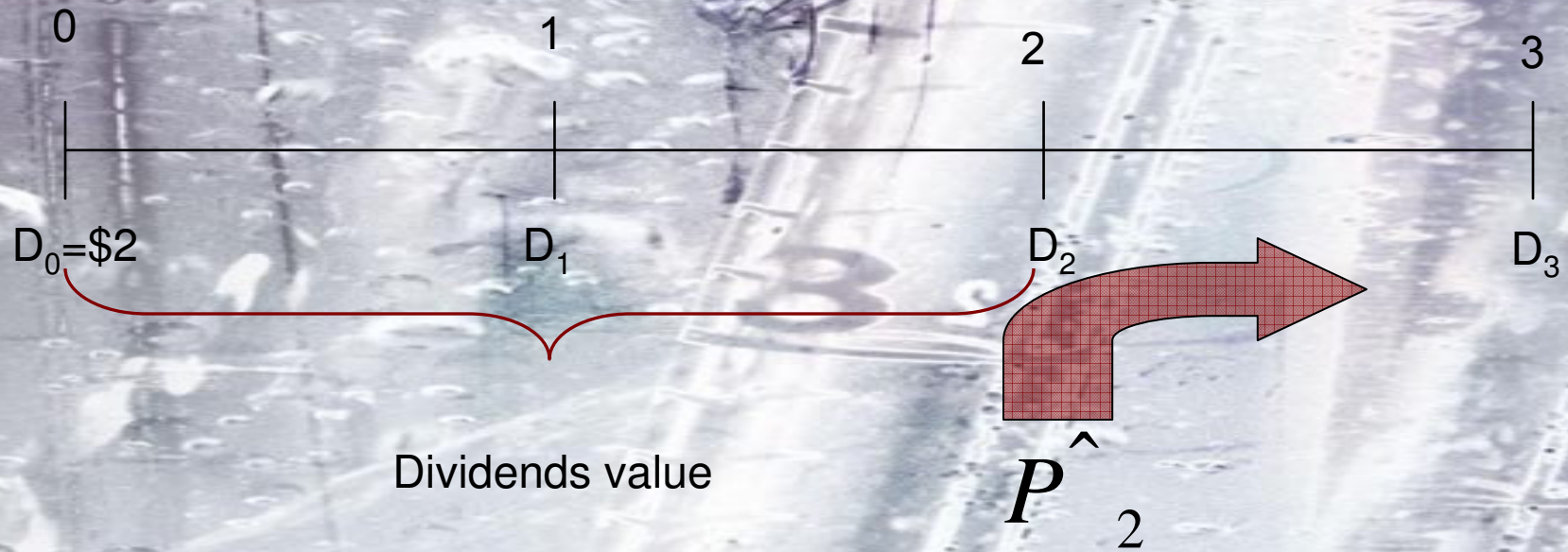
$D_1 = \$1 (1.1) = \1.1
 $P_0 = \$20$
 $g = 10\%$

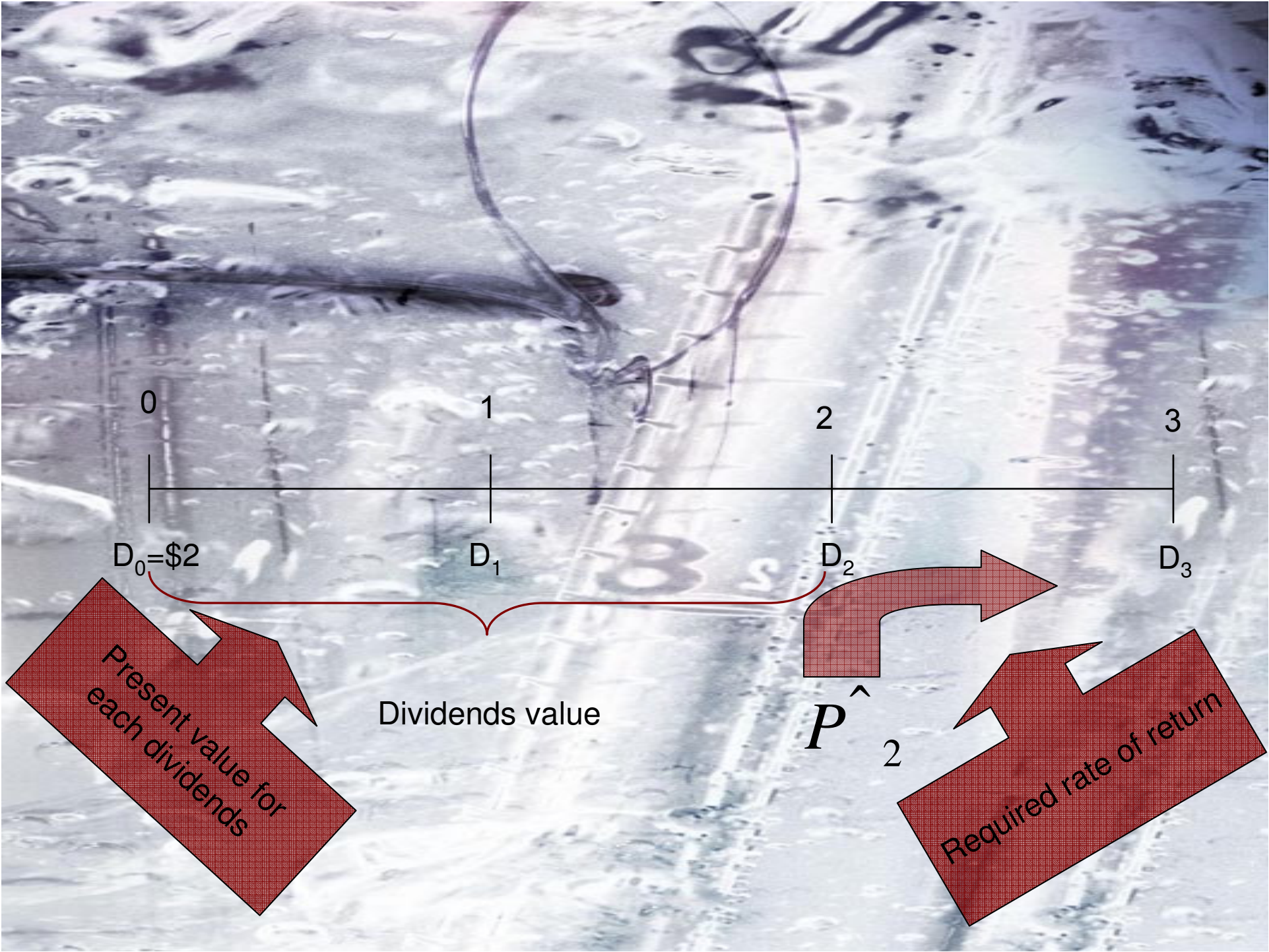
$$\hat{r}_s = \frac{\$1.1}{\$20} + 0.10 = 0.155 = 15.5\%$$

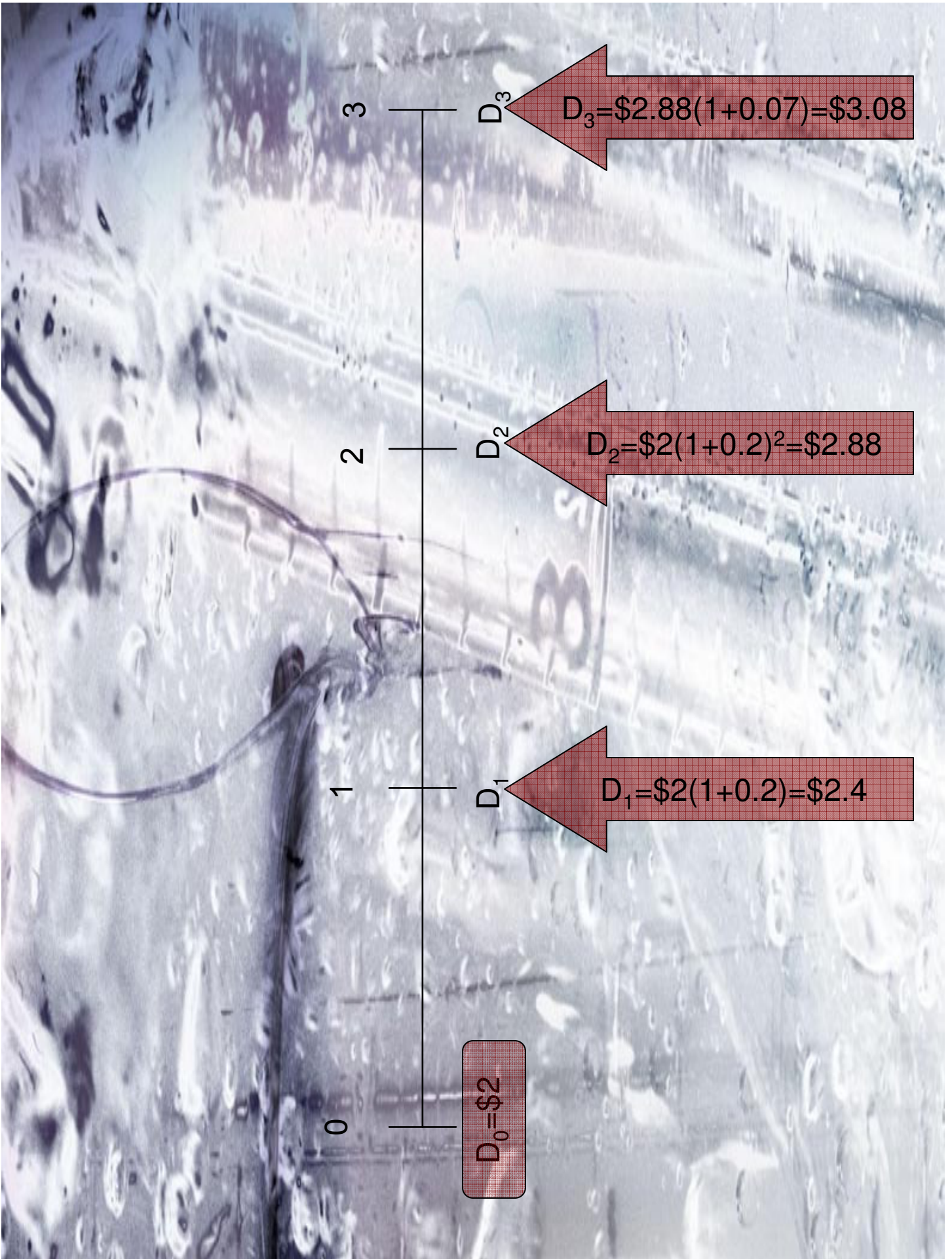
Problem 7-5

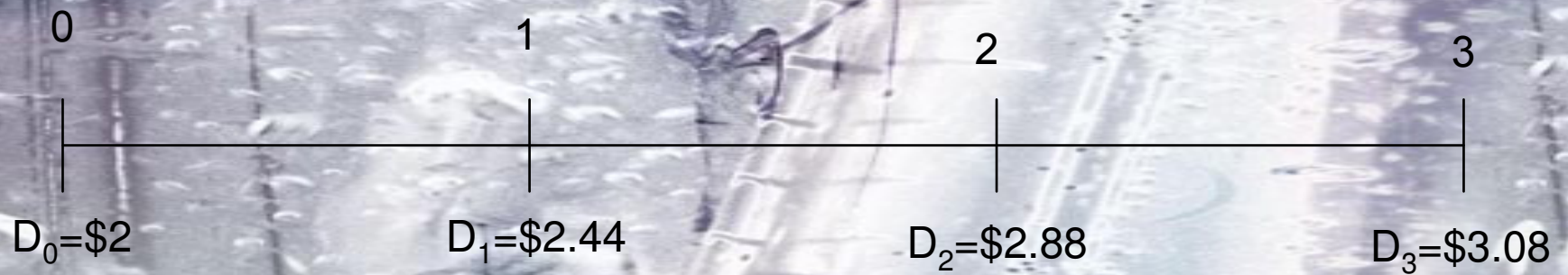
- Current dividend is \$2
- Growth is 20% for 2 years, and then 7%
- Stock beta is 1.2
- Risk free rate is 7.5%
- Market risk premium is 4%
- What is the estimated current stock price?

Answer



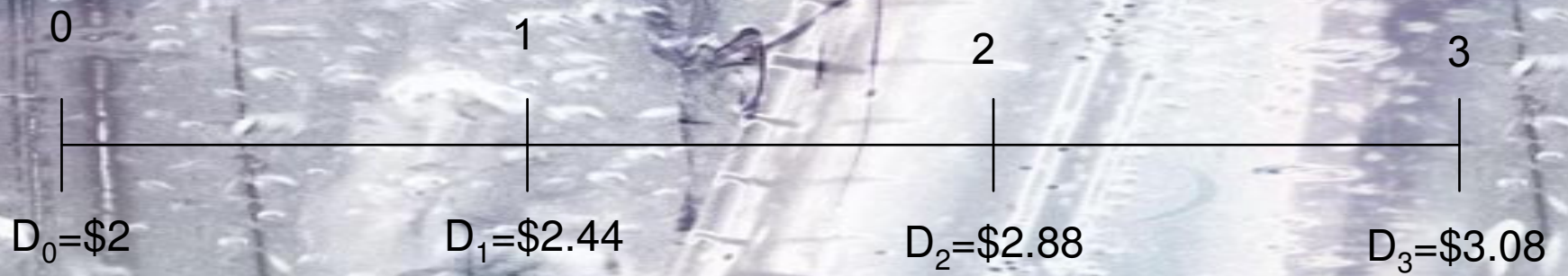




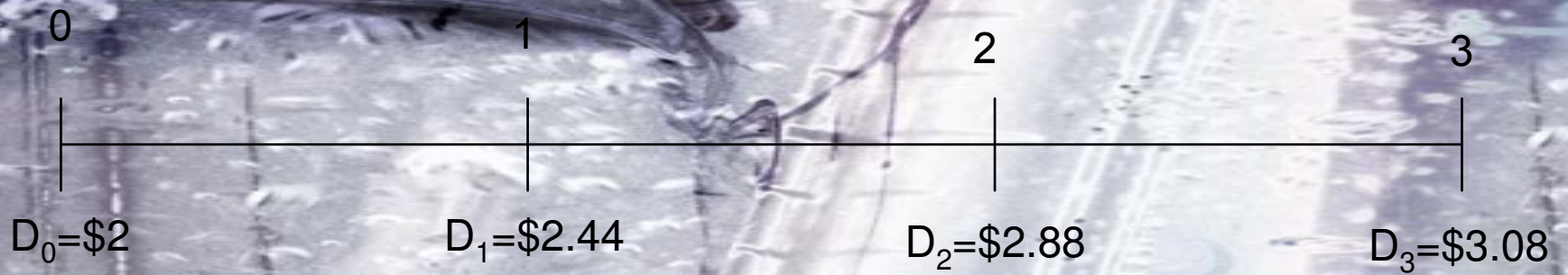


$$r_s = r_{RF} + (RP_M) b_s$$

$$= 7.5\% + (4\%) 1.2 = 12.3\%$$

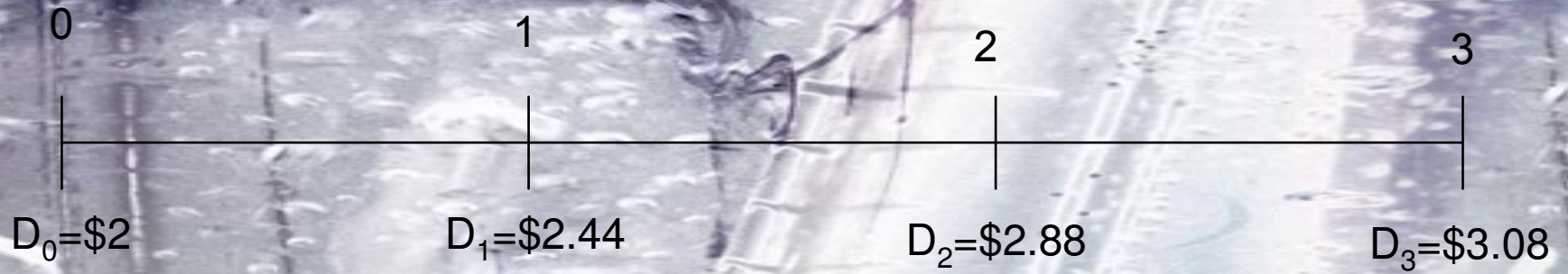


Present value of each dividend =
$$\frac{D_0 (1 + g)^t}{(1 + r_s)^t}$$



Present value of each dividend = $\frac{D_1}{(1+r_s)^{t=1}} + \frac{D_2}{(1+r_s)^{t=2}}$

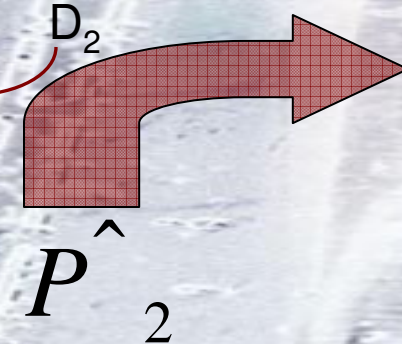
0.123

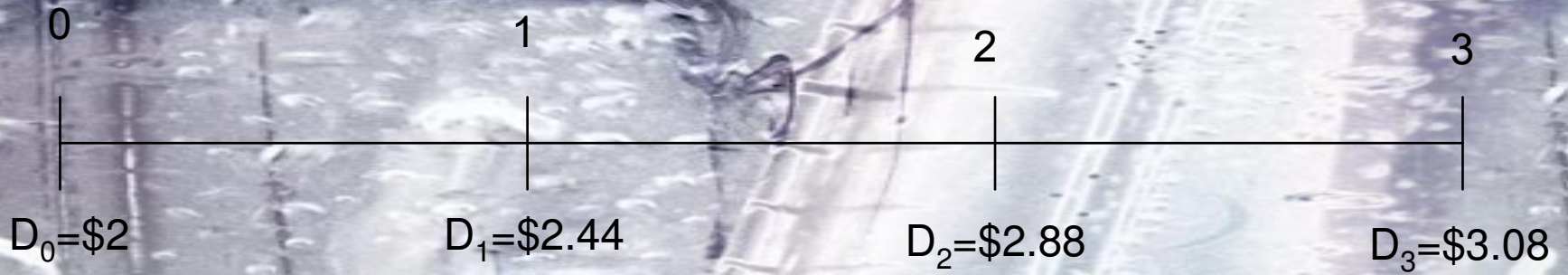


$$PV = \frac{\$2.44}{1.123} + \frac{\$2.88}{(1+0.123)^2} = \$2.137 + \$2.284 = \$4.42$$

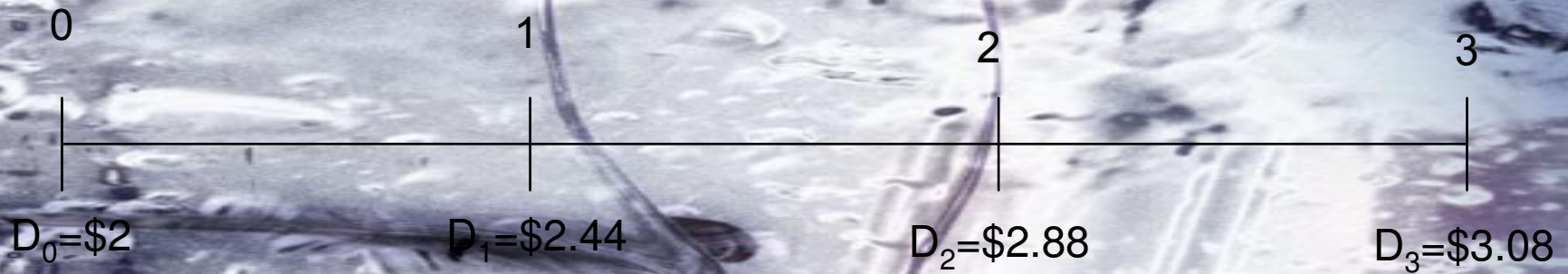


Dividends value





$$\hat{P}_2 = \frac{D_3}{r_s - g} \quad \hat{P}_2 = \frac{\$3.08}{0.123 - 0.07} = \$58.11$$



$$\hat{P}_2 = \frac{D_3}{r_s - g} \quad \hat{P}_2 = \frac{\$3.08}{0.123 - 0.07} = \$58.11$$

$$\$46.08 = \frac{\$58.11}{(1 + 0.123)^2}$$



PV of
Price after
2 years

PV of
dividends

$$\hat{P}_0 = \$4.42 + \$46.08 = \$50.5$$