

**THE COST OF CAPITAL
TO A
PUBLIC UTILITY**

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so that the current value can be widely off the mark as a measure of the expected future value.

5.4 Other Measures of Growth

The measure of expected growth in the dividend established in the previous two sections, the intrinsic growth rate, is not the only possible measure of the variable. Another plausible measure is some average of the past rates of growth in the dividend. Under our model of security valuation, dividend, earnings, and price per share all are expected to grow at the same rate. Hence, the rates of growth in the dividend, earnings, and price also are candidates for estimates of the expected rate of growth in the dividend.

Let us consider first the rate of growth in earnings per share. The earnings per share during T adjusted for stock splits and stock dividends to make interperiod comparisons valid is

$$\text{AYPS}(T) = \text{AFC}(T) / .5 [\text{ANS}(T) + \text{ANS}(T - 1)], \quad (5.4.1)$$

where $\text{ANS}(T)$ is the number of shares outstanding at the end of T adjusted for stock splits and dividends. The rate of growth in earnings per share during T is

$$\text{YGR}(T) = [\text{AYPS}(T) - \text{AYPS}(T - 1)] / \text{AYPS}(T - 1). \quad (5.4.2)$$

For reasons to be given shortly, the smoothed rate of growth in earnings is superior to the current rate as a forecast of the expected rate. The smoothed rate of earnings growth is obtained from

$$\begin{aligned} \text{Ln}[1 + \text{YGRS}(T)] &= \lambda \text{Ln}[1 + \text{YGR}(T)] \\ &+ (1 - \lambda) \text{Ln}[1 + \text{YGRS}(T - 1)], \end{aligned} \quad (5.4.3)$$

with $\lambda = .15$ and $\text{YGRS}(1953) = .04$.

The primary reason for a difference between YGR and GRTH is a change in the rate of return on the common equity. To illustrate, assume a firm that has been earning a return on common of .10 and retaining one-half of its income to finance its investment. The rate of growth under both measures will be .05. If the firm's rate

of return on common rises from .10 to .11, the retention growth rate will rise from .05 to $(.5)(.11) = .055$. However, the earnings growth rate will rise from .05 to .155.⁵ Furthermore, the earnings growth rate in subsequent periods will be .055 if the return on common remains .11. This example suggests that the intrinsic growth rate is superior to the earnings growth rate as a measure of expected growth. Investors nonetheless may look to past data on earnings growth for information on expected future growth, and it is the growth investors expect that should be used to measure share yield.

A number of considerations suggest that investors may, in fact, use earnings growth as a measure of expected future growth. First, the intrinsic growth rate includes stock financing growth as well as retention growth. The former is difficult for us to measure and may be even more difficult for investors. Consequently, investors may use past earnings growth to forecast the future since it incorporates in one statistic growth from all sources. Second, we saw that inflation will result in a rise in the allowed rate of return on equity for a regulated company. If this response to inflation takes place with a lag, that is, the regulatory agency raises RRC over time, earnings growth will reflect the forecast rate of growth better than intrinsic growth. Finally, it appears that security analysts use past growth in earnings more than any other variable to forecast future growth.

Given that earnings growth is used by investors to forecast future growth, the smoothed value of the variable YGRS is superior to the current value. The previous illustration revealed that YGR overreacts to changes in the allowed rate of return and therefore is subject to large random fluctuations. The data on YGR confirm this conclusion.

The use of dividend growth as a forecast of future growth is subject to the same limitations as earnings if the firm pays a constant fraction of its earnings in dividends. That is, under this assumption the dividend growth rate in any period is the same as the earnings growth rate. Firms tend to change their dividend rate from one

⁵Let the book value per share at the start of T be $\text{BVS}(T - 1) = \$50.00$. With $\text{RRC}(T) = .10$, $\text{AYP}(T) = \$5.00$, and with $\text{RETR}(T) = .5$, $\text{BVS}(T) = \$52.50$ if $\text{RRC}(T + 1) = .10$, $\text{AYP}(T + 1) = \$5.25$, and $\text{YGR}(T + 1) = \text{RTGR}(T - 1) = .05$. However, if $\text{RRC}(T + 1) = .11$, $\text{RTGR}(T + 1) = (.11)(.5) = .055$, while $\text{AYP}(T + 1) = \$5.775$, and $\text{YGR}(T + 1) = (\$5.775 - \$5.00)/\$5.00 = .155$.