DERIVATION OF THE EXCESS RETURN ON EQUITY FORMULA

Starting with the basic Gordon model (with no sv term[1]):

$$P = \frac{(1-b)rB}{k-br} \qquad [1]$$

and rearranging

$$r(1-b) = (k-br)\frac{P}{B}$$

we get

$$r = br + (k-br)\frac{P}{B} \qquad [2]$$

But

$$br = k - \frac{D}{P}$$

and

$$(k-br) = \frac{D}{P}$$

so substituting into [2] we get

$$r = k - \frac{D}{P} + \frac{D}{P}x\frac{P}{B}$$

or

$$r - k = \frac{D}{B} - \frac{D}{P} \qquad [3]$$

In other words, the difference between dividend-to-book and dividend-to-price is equal to the difference between expected return on book value and expected return on market value (cost of equity). Furthermore, the implied relationship between r and k for various levels of the market-to-book ratio is

$$r = k + \frac{\Delta\left(\frac{P}{B}\right)}{1/\left(\frac{D}{P}\right)} \qquad [4]$$

where where $\Delta\left(\frac{P}{B}\right)$ is the difference between the market-to-book ratio and 1.0.

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[1] The "sv" term is an extension to the Gordon model to capture expected growth from the sale of shares at prices above book value. It implicitly capitalizes growth that owes to the *expectation* of excess returns. Thus it is inapplicable to a DCF return for a regulated utility where there should not be any expectation of excess returns.