Formula for Adjusting the Cost of Equity to Allow for Stock Expense and Underpricing

Let

$$RR = kB(N + n) + fnB \quad (1)$$

where

$RR =$ total dollars of required return on equity;

$k =$ cost of equity;

$B =$ book value per share;

$N =$ number our shares outstanding before the issue;

$n =$ number of new shares;

$f =$ allowance for stock expense and underpricing

In Equation (1) the total dollars of required return are equated to the total fair return, $kB(N + n)$, plus the dollar cost of the stock issue, fnB, effectively expensing the dollar cost of the stock issue. The required return on equity, adjusted to allow for stock expense and underpricing, is therefore

$$r = \frac{RR}{N(N + n)} \quad (2)$$

and by substituting (1) into (2) and rearranging we get

$$r = k + \frac{nf}{N + n} \quad (3)$$

The adjustment to the cost of equity to allow for stock expense and underpricing is therefore the quantity nf/(N + n). Recognizing n/(N + n) as the rate of growth in new shares, we can further simplify this to

$$r = k + zf \quad (4)$$

where z is the rate of growth in new shares, and f is the percentage allowance for stock expense and underpricing, and zf is the flotation cost allowance as an addition to the cost of equity.