THE COST OF EQUITY CAPITAL FOR SMALL FIRMS

The three equity cost-estimating techniques discussed in Chapter 9 (DCF, Bond-Yield-plus-Risk-Premium, and CAPM) have serious limitations when applied to small firms. Consider first the constant growth model, $\hat{k}_s = D_1/P_0 + g$. Imagine a small, rapidly growing firm, such as Bio-Technology General (BTG), which will not in the foreseeable future pay dividends. For firms like this, the constant growth model is simply not applicable. In fact, it is difficult to imagine any dividend model that would be of practical benefit for such a firm because of the difficulty of estimating dividends and growth rates.

The second method, which calls for adding a risk premium of 3 to 5 percent to the firm's cost of debt, can be used for some small firms, but problems arise if the firm does not have a publicly traded bond outstanding. BTG, for example, has no public debt outstanding, so we would have trouble using the bond-yield-plus-risk-premium approach for BTG.

The third approach, the CAPM, is often not usable, because if the firm's stock is not publicly traded, then we cannot calculate its beta. For the privately owned firm, we might use the "pure play" CAPM technique (discussed in Web Appendix 9B), which involves finding a publicly owned firm in the same line of business, estimating that firm's beta, and then using that beta as a replacement for one of the small businesses in question.

To illustrate the pure play approach, again consider BTG. The firm is not publicly traded, so we cannot estimate its beta. However, data are available on more established firms, such as Genentech and Genetic Industries, so we could use their betas as representative of the biological and genetic engineering industry. Of course, these firms' betas would have to be subjectively modified to reflect their larger sizes and more established positions, as well as to take account of the differences in the nature of their products and their capital structures as compared to those of BTG. Still, as long as there are public companies in similar lines of business available for comparison, their betas can be used to help estimate the cost of capital of a firm whose equity is not publicly traded. Note also that a "liquidity premium" as discussed in Chapter 4 would also have to be added to reflect the illiquidity of the small, nonpublic firm's stock.

FLOTATION COSTS FOR SMALL ISSUES

When external equity capital is raised, flotation costs increase the cost of equity capital above that of internal funds. These flotation costs are especially significant for smaller firms, and they can have a major effect on capital budgeting decisions involving external equity funds. To illustrate, consider a firm that is expected to pay constant dividends forever, hence its growth rate is zero. In this case, if F is the percentage flotation cost, then the cost of equity capital is $k_e = D_1/[P_0(1 - F)]$. The higher the flotation cost, the higher the cost of external equity.

How big is F? Looking at the estimates presented in the Chapter 9 Industry Practice box entitled "How Much Does It Cost to Raise External Capital?," we see that small debt and equity issues have considerably higher flotation costs than large issues. For example, a non-IPO issue of common stock that raises more than $200 million in capital would have a flotation cost of about 3.5 percent. For a firm that is expected to provide a constant 15 percent dividend yield (that is, $D_1/P_0 = 15\%$), the cost of equity would be $15\%/(1 - 0.04)$, or 15.6 percent. However, a similar but smaller firm that raises less than $10 million would have a flotation cost of about 13 percent, which would result in a flotation-adjusted cost of equity capital of $15\%/(1 - 0.13) = 17.2$ percent, or 1.6 percentage points higher. This differential would be even larger if an IPO were involved. Therefore, it is clear that a small firm would have to earn considerably more on the same project than a large firm. Small firms are therefore at a substantial disadvantage because of flotation cost effects.

THE SMALL-FIRM EFFECT

A number of researchers have observed that portfolios of small firms' stocks have earned higher average returns than portfolios of large firms' stocks; this is called the "small-firm effect." For example, over the time period 1926–1999, Ibbotson Associates finds that the average yearly return for the smallest stocks on the NYSE has been 17.6 percent. By contrast, over the same time period the largest NYSE stocks have had an average yearly return of 13.3 percent. On the surface it would seem to be advantageous to the small firm to provide average returns in the stock market that are higher than those of large firms. In reality, however, these higher returns suggest that smaller firms have a higher cost of equity capital.

What can explain the higher cost of capital for smaller firms? It may be argued that the stocks of smaller firms are riskier and less liquid than the stocks of larger firms, and this accounts for the differences in returns. Indeed, most academic research finds that both standard deviations of yearly returns and betas are higher for smaller firms than they are for larger firms. However, the returns for small firms are often still larger even after adjusting for the effects of their higher risks as reflected in their beta coefficients. In this regard, the small-firm effect is inconsistent with the CAPM. Some researchers have attempted to address this issue by including firm size as a predictor in their asset pricing models. For example, in Chapter 5 we mentioned that the multi-factor models recently developed by Fama and French include firm size as a key factor in explaining stock market returns.

Over the past few years there has been an interesting twist to the small-firm effect. In recent years, small firm stocks have tended to have *lower* returns than those of larger firms. Does this mean the small-firm effect has disappeared? Not necessarily. Remember from the Chapter 5 box entitled "Estimating the Market Risk Premium" that using historical returns to estimate expected future returns becomes problematic whenever the risk premium changes over time. It is possible that, in recent years, not only has the market risk premium itself changed but that the size premium has also changed.

While the small-firm effect continues to generate considerable discussion among both researchers and practitioners, most analysts conclude that smaller firms have higher capital costs than do otherwise similar large firms. In general, the cost of equity appears to be one or two percentage points higher for small firms (those with market values less than $20 million) than for large NYSE firms with similar risk characteristics. The manager of a small firm should take this factor into account when estimating his or her firm's cost of equity capital.