Supernormal "High-Flyer" Growth Valuation Model

Some companies display initial periods of what could be described as hyper-growth, followed by an extended period of rapid growth, before stabilizing at a more normal and sustainable growth rate. Initial public offerings and start-up companies may follow this model. This pattern reflects growth over their initially small revenue base, the introduction of new product, or the sale of an existing product to a new or under-served customer group. The growth rate of many Internet-related companies would seem to place them in the "high-flyer" category. All companies that fall into this category are not small. Microsoft, Cisco, and American Online, after years of growing at more than fifty percent per year, continue to grow at rates well above twenty percent annually.

The following illustration assumes that a firm is expected to grow for two consecutive periods, each of which is five years in length, before assuming a more normal long-term growth rate. Because the cost of capital in each five year period is different reflecting the growth rate of cash flow in that period, each year's cash flows must be discounted by the cumulative cost of capital from prior years.

$$P_0 = \sum_{t=1}^{5} \frac{FCFF_t \times (1+g_{1-5})^t}{(1+WACC_{1-5})^t} + \sum_{t=6}^{10} \frac{(FCFF_t \times (1+g_{6-10})^t}{(1+WACC_{1-5})^5 (1+WACC_{6-10})^t}$$

$$+ \frac{FCFF_{10}(1+g_{11}) / (WACC_{11}-g_{11})}{(1+WACC_{1-5})^5 (1+WACC_{6-10})^5}$$

where

$FCFF_t$ = Free cash flow to the firm at time t
$FCFF_1 = FCFF_0 \times (1 + g_{1-5})$
$FCFF_6 = FCFF_5 \times (1 + g_{6-10})$

g_{1-5} = Growth rate during years 1 to 5
g_{6-10} = Growth rate during years 6 to 10
g_{11} = Sustainable growth rate
$g_{1-5} > g_{6-10} > g_{11}$

$WACC_{1-5}$ = Cost of capital during years 1 to 5
$WACC_{6-10}$ = Cost of capital during years 6 to 10
$WACC_{11}$ = Sustainable growth period cost of capital
$WACC_{1-5} > WACC_{6-10} > WACC_{11}$

Example: Supernormal "High Flyer" Valuation Model

In the year prior to going public, a firm has revenues of $20 million and an EBIT of $4 million. The firm has no debt and revenue is expected to grow at 50 percent for the next five years, 30 percent annually during the following five years, and 6% annually thereafter. Operating margins are expected to remain constant throughout. Capital expenditures are expected to grow in line with depreciation and working capital requirements are minimal. The average beta of a publicly traded company in this industry is 1.50 and the average debt/equity ratio is 20 percent. The firm does not intend to borrow during the next five years and then expects to move to the industry average debt/equity ratio thereafter. The pre-tax cost of debt is 7 percent, the ten-year Treasury bond rate is 6 percent and the tax rate is 40 percent. The normal spread between the return on stocks and the risk free rate of return is believed to be 5.5 percent. Estimate the value of the firm's equity.

a. β_u (unlevered beta) for comparable firms = $\dfrac{\beta_l}{(1 + (1\text{-}t)(D/E))}$

$= \dfrac{1.5}{(1 + .2 \times .6)}$

$= \dfrac{1.5}{1.12}$

$= 1.34$

b. $k_{e1\text{-}5} = R_f + \beta_u (R_m - R_f) = .06 + 1.34 (.055) = 13.4\%$

c. $WACC_{1\text{-}5} = k_{e1\text{-}5} = 13.4\%$ (as the firm does not plan to borrow during this period)

d. $k_{e6\text{-}10} = .06 + 1.5 (.055) = 14.3\%$

e. $WACC_{6\text{-}10} = .143 \times .8 + .07 (1\text{-}.4) \times .2 = .114 + .008 = 12.2\%$

f. Projected free cash flows to the firm during the two consecutive five year periods:

($Millions)

Year	1	2	3	4	5	6	7	8	9	10	Terminal Year
	3.6	5.4	8.1	12.2	18.3	23.8	30.9	40.2	52.3	68.0	72.0

g. Terminal value = $72.0 / (.122 - .06) = $1,161.29

PV (using 13.4% for the first five years and 12.2% thereafter) is calculated as follows:

$$= \frac{\$3.6}{(1.134)} + \frac{\$5.4}{(1.134)^2} + \frac{\$8.1}{(1.134)^3} + \frac{12.2}{(1.134)^4} + \frac{18.3}{(1.134)^5} + \frac{23.8}{(1.134)^5(1.122)} +$$

$$\frac{\$30.9}{(1.134)^5(1.122)^2} + \frac{\$40.2}{(1.134)^5(1.122)^3} + \frac{\$52.3}{(1.134)^5(1.122)^4} + \frac{\$68.0}{(1.134)^5(1.122)^5} +$$

$$+ \frac{\$1,161.29}{(1.134)^5(1.122)^5}$$

$$= \$456.09$$

Notes:

1. In (a), β_u must be calculated because the firm to be valued is debt-free, and its β is to be estimated from the β's of public companies in an industry whose debt averages 20 percent of equity. Therefore, the average industry β reflects the effects of this leverage.
2. In (d), the public companies' β of 1.5 is used as the firm will be borrowing up to the industry average debt-to-equity ratio.
3. In (f) FCFF = EBIT(1-t) since capital expenditures are assumed to be fully offset by depreciation and the change in working capital is assumed to be minimal.
4. In (f), FCFF in year 1 = \$4 x 1.5 x .6 = 3.6; FCFF in year 2 = 3.6 x1.5 = 5.4, etc.