Module 3: Option #1

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| --- | --- | --- | --- | --- | --- | --- |
| INPUTS (In Millions) |  | Year | | | | |
|  |  | Current | Projected | | | |
|  |  | 0 | 1 | 2 | 3 | 4 |
| Free cash flow |  |  | -$20.0 | $20.0 | $80.0 | $84.0 |
| Marketable Securities |  | $40 |  |  |  |  |
| Notes payable |  | $100 |  |  |  |  |
| Long-term bonds |  | $300 |  |  |  |  |
| Preferred stock |  | $50 |  |  |  |  |
| WACC |  | 9.00% |  |  |  |  |
| Number of shares of stock |  | 40 |  |  |  |  |

**Calculate the estimated horizon value (i.e., the value of operations at the end of the forecast period immediately after the Year-4 free cash flow). Assume growth becomes constant after Year 3.**

**Estimated Horizon Value after Year 3**

Long-term constant growth in free cash flow after year three is 5% as year three's free cash flow was predicted to come in at $80 million and year four's at $84 million for a 5% difference and the question says to assume that growth is constant from year three onward.

“The horizontal value of operations is the value of operations at the end of the explicit forecast period. It is also called the terminal value or continuing value and it is equal to the present value of all free cash flow beyond the forecast period, discounted back to the end of the forecast period at the weighted average cost of the capital.

Horizontal value = V(at time T) = FCFT+1 / WACC – g = FCFT(1+g)/(WACC – g)” (Ehrhardt & Bringham, 2014, p. 332)

FCFT(1+g)/(WACC – g) 🡪 $84(1+.05)/(.09-.05) 🡪 $2,205.00

**Calculate the present value of the horizon value, the present value of the free cash flows, and the estimated Year-0 value of operations.**

**Present Value of the Horizon Value**

There are many ways to calculate the present value of the horizon value but for this problem the formula used will be as follows (Damodaran, 2016):

PVH at horizon = Horziontal Value / (1 + WACC)4

PVH at horizon = $2,205 / (1 + 0.09)4 🡪 $1,562.08

**Present Value of the Free Cash Flows**

Present Value of the Free Cash Flows is found by taking each individual cash flow time period and dividing it by the result of 1 + WACC to the T power (Campbell, 2020).

In this example, the free cash flows were -$20, $20, $80 and $84. WACC is a constant of 9.00% or 0.09. There were four years or time periods to account for.

PVFCF = FCF/(1+r) + FCF2/(1+r)2 + FCF3/(1+r)3+FCF4/(1+r)4

PVFCF = -$20/(1+.09) + $20/(1+.09)2 + $80/(1+.09)3+$84/(1+.09)4 🡪 $119.77

**Estimated Year-0 Value of Operations**

Estimated year value of operations is simply calculated by adding the present value of the horizon value by the present value of the free cash flows.

Value of Operations = Present Value of the Horizon Value + Present Value of the Free Cash Flows

Value of Operations = $1562.08 + $119.77 🡪 $1,681.85

**Calculate the estimated Year-0 price per share of common equity.**

While there are many ways to value common stocks such as the dividend growth model, corporate value model and the multiples of comparable firms, Year-0 price per share of common equity will be calculated by adding the value of operations and marketable securities together and then subtracting the sum of all debt such as notes, bonds, and preferred stock (Valuing Common Stocks, 2020). This is then divided by the number of shares to get a price per share.

(Value of operations + marketable securities) – (notes payable + long-term bonds + preferred stock) / 40 🡪 Year-0 price per share of common equity

(($1,681.5 + $40.00) – ($100 + $300 + $50)) / 40 🡪 $31.79

**What do these values tell us about the organizations values in the future?**

Considering the present value of the horizon value is less than the estimated horizon value after year three, it does seem that the organizations values in the futures are on the ascent and that the company holds value in general. It is a little disappointing to see that the rate of free cash flow cannot remain as large as it once was, but from there, it does hold steady at 5%, which is still a net positive.

References

Campbell, P. (2020). Discount Rate Formula: How to Find Discount Rate to Determine NPV. *Profit Well.* Retrieved from <https://www.profitwell.com/blog/discount-rate-formula>

Damodaran, A. (2016). Closure in Valuation. *NYU.* Retrieved from <http://pages.stern.nyu.edu/~adamodar/pdfiles/eqnotes/dcfstabl.pdf>

Ehrhardt, M. & Bringham, E. (2014). Corporate Finance A Focused Approach 6th Edition. *Cengage Learning*.

Valuing Common Stocks. (2020). *SFSU.* Retrieved from <http://online.sfsu.edu/donglin/lect_stock.pdf>