Jim Hitchner's
Valuation Products and Services

DO YOU KNOW?

ISSUE 37 - NOVEMBER 2018

A free periodical to promote education and alert you to important areas of interest in the financial valuation, fraud, and litigation services profession.

Do You Know...

... the connection between the Gordon Growth Model and an exit multiple in the terminal year of a DCF model?

First off, both applications are acceptable and supportable if used correctly. However, you also need to look at the relationship of net cash flow to EBITDA, i.e., the percentage of EBITDA that results in net cash flow. This is often overlooked. Let's take some examples.

Assumptions:

- Five-year interim period
- WACC discount rate is 15%
- Long-term growth rate is 3%
- EBITDA in Year 5 of $5,000,000
- Exit multiple is EBITDA multiple X $5,000,000
- Net cash flow (NCF) in the terminal year (5th year here) of $3,000,000
- Market approach shows an EBITDA multiple of 5 times

Gordon Growth Model

Most valuation analysts apply the Gordon Growth Model (GGM) in the terminal-year calculation of a DCF model. The formula is simple:

$$\text{Cash flow}_n / (\text{Discount rate} - \text{Long-term growth rate})$$

Cash flow$_n$ is the expected economic income benefit in the full period after the interim period, e.g., the sixth year in a five-year DCF model. The CCF method also relies on the GGM.[1]

$$\frac{\$3{,}000{,}000\ (1 + .03)}{(.15 - .03)} = \frac{\$3{,}090{,}000}{.12} = \$25.8 \text{ million}$$

Exit Multiple

An alternative terminal-year valuation method is the use of exit multiples. *Financial Valuation Applications and Models* addresses exit multiples as follows:

One alternative method for determining the amount of the terminal value is to use a multiplier of an income parameter such as net income, earnings before interest and taxes (EBIT), earnings before interest, taxes, depreciation, and amortization (EBITDA), etc.
This multiple, which is often used by investment bankers, is generally determined from guideline company market data and is referred to as an "exit multiple." It is applied to one of the income parameters at the end of the explicit period. Because it is sometimes difficult to support the use of a market approach within an income approach, this method is not used as much as the Gordon Growth Model. However, it can be used effectively as a reasonableness check on other models.[2]

The *Hitchner Pratt Fishman A Consensus View Q&A Guide to Financial Valuation* discusses the terminal year, as follows:

In theory, the application of each of the methods should result in the same or similar value. However, that is often not the case. We believe that the use of the GGM maintains the independence of the income approach, particularly in the terminal year of a DCF model. Because the present value of the terminal year value is usually over 50% of the total value, infusing market multiples means that over 50% of the income approach is actually a market approach, not an income approach. The mixing of a market approach with an income approach is one of the primary reasons to use a GGM. However, we recommend that the analyst initially apply the GGM and then calculate the implied multiple based on the GGM value, typically invested capital to EBITDA, as a test of reasonableness or to explain the reasons for the differences.[3]

As previously said, both applications should give the same or similar value. As such, for those champions of exit multiples, we suggest that you also calculate the implied long-term growth rate embedded in the exit multiple. We often find that there is a disconnect, typically with an unsupportable long-term growth rate.[4]

An EBITDA exit multiple is used below:

$5,000,000 X 5 = $25 million

Let's calculate the long-term growth rate embedded in the 5 times EBITDA multiple using the following formula:

Long-Term Growth = [DR(Exit Value) - NCF]/(NCF + Exit Value)
Long-Term Growth = [.15($25,000,000) - $3,000,000]/($3,000,000 + $25,000,000)
Long-Term Growth = $750,000/$28,000,000
Long-Term Growth = .027 = 2.7%

DR	=	Discount Rate
NCF	=	New Cash Flow
Exit Value	=	EBITDA times an EBITDA Multiple

These two values are close, $25.8 million vs. $25 million, and it seems that both terminal-year methods work here given the small difference in the growth rates of 3% vs. 2.7%. This is

obviously a good outcome. It also has a lot to do with the percentage of EBITDA that is turned into net cash flow.

Now, let's switch it up a bit. We will first compare the outcomes with the relationship between EBITDA and net cash flow in Year 5 of a DCF model. Assume everything is the same but cash flow, as follows:

Cash Flow as a Percentage of EBITDA
Discount Rate is 15%; Long-term Growth Rate is 3%; Exit Multiple is five times

			Values ($M)		Exit Multiple
Percentage	**EBITDA**	**Cash Flow**	**GGM**	**Exit Multiple**	**LT Growth**
40%	$5,000,000	$2,000,000	$17.2	$25.0	6.5%
50%	$5,000,000	$2,500,000	$21.5	$25.0	4.5%
60%	$5,000,000	$3,000,000	$25.8	$25.0	2.7%
70%	$5,000,000	$3,500,000	$30.0	$25.0	0.9%
80%	$5,000,000	$4,000,000	$34.3	$25.0	NMF

What does this illustrate? That cash flow is king, and EBITDA may or may not be. The exit multiple value is the same regardless of how much cash flow a company produces. That can not be right. Let's try a few more examples.

Cash Flow as a Percentage of EBITDA
Discount Rate is 15%; Long-term Growth Rate is 4%; Exit Multiple is five times

			Values ($M)	Exit Multiple	
Percentage	**EBITDA**	**Cash Flow**	**GGM**	**Exit Multiple**	**LT Growth**
40%	$5,000,000	$2,000,000	$18.9	$25.0	6.5%
50%	$5,000,000	$2,500,000	$23.6	$25.0	4.5%
60%	$5,000,000	$3,000,000	$28.4	$25.0	2.7%
70%	$5,000,000	$3,500,000	$33.1	$25.0	0.9%
80%	$5,000,000	$4,000,000	$37.8	$25.0	NMF

Cash Flow as a Percentage of EBITDA
Discount Rate is 15%; Long-term Growth Rate is 5%; Exit Multiple is five times

			Values ($M)		Exit Multiple
Percentage	**EBITDA**	**Cash Flow**	**GGM**	**Exit Multiple**	**LT Growth**
40%	$5,000,000	$2,000,000	$21.0	$25.0	6.5%
50%	$5,000,000	$2,500,000	$26.3	$25.0	4.5%
60%	$5,000,000	$3,000,000	$31.5	$25.0	2.7%
70%	$5,000,000	$3,500,000	$36.8	$25.0	0.9%
80%	$5,000,000	$4,000,000	$42.0	$25.0	NMF

As can be seen, changes in the growth rate produce changes in the GGM and change the relationship of net cash flow to EBITDA. What does this all mean? It means that you need to reconcile the GGM value to the exit multiple value by comparing the percentage of EBITDA that is converted to net cash flow.

[1] James R. Hitchner, Shannon P. Pratt, and Jay E. Fishman, *Hitchner, Pratt, Fishman, A Consensus View Q&A Guide to Financial Valuation*, Valuation Products and Services, 2016, p. 59.

[2] James R. Hitchner, editor and coauthor, *Financial Valuation Applications and Models*, 4th edition (Hoboken, NJ: John Wiley & Sons, 2017), p. 147.
[3] James R. Hitchner, Shannon P. Pratt, Jay E. Fishman, *Hitchner Pratt Fishman, A Consensus View Q&A Guide to Financial Valuation*, Valuation Products and Services, 2016, p. 61.
[4] Ibid.

For more information on this topic as well as other important issues,
view Jim Hitchner's November 15, 2018 webinar
"New" Best Practices - The Income Approach.