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**APPENDIX 14B, *GENERIC FORM OF CORPORATE VALUATION IN M&A
SEVEN-STEP DCF MODEL***
(Or the “Appendix 14B, *Generic Form CVM&A- Seven-Step DCF Model*”)

[JANUARY 17, 2024; TO BE UPDATED PERIODICALLY]

A SUPPLEMENT TO:

CORPORATE VALUATION IN M&A

**A BOOK PUBLISHED IN DECEMBER 2023 BY:
THE PRACTISING LAW INSTITUTE (PLI)**

**THE BOOK WAS WRITTEN BY
SAMUEL C. THOMPSON, JR., PROFESSOR PENN STATE LAW**

THIS IS A VALUATION MODEL THAT IS A SUPPLEMENT TO THIS BOOK

:

FIRST EDITION OF THIS MODEL:

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THE AUTHORS OF THIS FIRST VERSION OF THE MODEL:

**THIS FIRST VERSION OF THIS DCF MODEL BECAME EFFECTIVE ON
JANUARY 20, 2024, AND WAS PREPARED BY PROFESSOR SAMUEL C.
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- THIS MODEL IS DESIGNED PRINCIPALLY FOR USE IN THE VALUATION
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TRANSACTION.**

- WITH APPROPRIATE ADJUSTMENTS, IF ANY, THIS MODEL MAY ALSO BE USED FOR THE VALUATION OF A FIRM THAT IS NOT THE TARGET IN AN M&A TRANSACTION.

- THIS DOCUMENT IS IMPLEMENTED BY EXCEL SHEETS ATTACHED TO:

*APPENDIX 14C, SPREADSHEET-ONLY FORM OF CORPORATE VALUATION IN M&A SEVEN-STEP DCF MODEL
(Or the “Appendix 14C, Spreadsheet-Only CVM&A Seven-Step DCF Model”)*

- APPENDIX 14C IS UTILIZED IN THE VALUATION, AS OF FEBRUARY ___, 2024, OF DELL TECHNOLOGIES INC. (DELL), A PUBLICLY HELD CORPORATION. FEBRUARY ___, 2024, WAS THE LAST DAY OF DELL’S FIRST ANNUAL FINANCIAL STATEMENTS ISSUED AFTER THE PUBLICATION OF THIS BOOK IN DECEMBER 2023. THE DELL VALUATION MAY BE UPDATED PERIODICALLY AND IS ENTITLED:

*APPENDIX 14A, DELL, INC. FORM OF CORPORATE VALUATION IN M&A SEVEN-STEP DCF MODEL, AS OF FEBRUARY ___, 2024, THE CLOSE OF DELL’S FIRST FISCAL YEAR ENDING IMMEDIATELY AFTER THE PUBLICATION OF THIS BOOK IN DECEMBER 2023.
(Or the “Appendix 14A Dell Form CVM&A DCF Model as of February ___, 2024”);*

- THUS, THE THREE RELATED APPENDICIES ARE:
 - Appendix 14A *Dell Form CVM&A DCF Model as of February ___, 2024*;
 - Appendix 14B, *Generic Form CVM&A- Seven-Step DCF Model*; and
 - Appendix 14C, *Spreadsheet-Only CVM&A Seven-Step DCF Model*

CAVEATS ON THE USE OF THIS MODEL: VALUATION IN M&A AND OTHERWISE IS AN ART AND NOT A SCIENCE. THEREFORE, VALUATION IS SUBJECT TO POTENTIAL SIGNIFICANT DISAGREEMENT AMONG THE PROFESSIONALS WHO ARE CONDUCTING THE VALUATION. THERE IS NO ASSURANCE THAT IN ANY PARTICULAR SITUATION THIS MODEL WILL PRODUCE THE CORRECT, OR A REASONABLE, VALUATION RESULT. THEREFORE, ANY USER OF THIS MODEL MUST TAKE APPROPRIATE CARE IN USING AND POSSIBLY ADJUSTING THE MODEL. PROFESSOR THOMPSON IS PROVIDING THIS MODEL WITHOUT CHARGE, AND HE AND PENN STATE LAW UNDERTAKE NO LIABILITY OF WHATEVER KIND TO ANY PERSON OR ENTITY WHO MAY AT ANY POINT USE, OR RELY ON, THIS MODEL IN A VALUATION, OR OTHERWISE.

TO FACILITATE THE UNDERSTANDING OF THIS MODEL, THE ACTUAL STEPS IN THE MODEL ARE HIGHLIGHTED IN TURQUOIS.

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I. SCOPE

A. In General

This Appendix 14B *Generic Form Corporate Valuation in M&A Seven-Step DCF Model (CVM&A Seven-Step DCF Model)*, implements the *Discounted Cash Flow (DCF) Valuation Model* discussed in chapter 14 of the book: *Corporate Valuation in M&A*. The author of this book, which is updated annually, is Professor Samuel C. Thompson, Jr. of Penn State Law, and the book is published by the Practising Law Institute (PLI).

B. Relationship Among the Models in Appendix 14A, 14B and 14C

As discussed more fully below, this *DCF Model* is designed to be used principally for the valuation of a publicly held Target¹ of an M&A transaction. The Model is implemented by the following three related appendices:

- APPENDIX 14A, DELL, INC. FORM OF CORPORATE VALUATION IN M&A SEVEN-STEP DCF MODEL, AS OF FEBRUARY __, 2024, THE CLOSE OF DELL’S FIRST FISCAL YEAR ENDING IMMEDIATELY AFTER THE PUBLICATION OF THIS BOOK IN DECEMBER 2023;
- APPENDIX 14B, GENERIC FORM OF CORPORATE VALUATION IN M&A SEVEN-STEP DCF MODEL; AND
- APPENDIX 14C, SPREADSHEET-ONLY FORM OF CORPORATE VALUATION IN M&A SEVEN-STEP DCF MODEL.

¹ As used in this book and in Appendices 14A and 14B, depending on the context, the term “Target” is sometimes referred to as “Target,” “a Target,” and “the Target.” Unless otherwise indicated, the term is referring to the company that is acquired in a conventional M&A transaction.

This Appendix 14B, the “Generic Form,” has a relatively complete discussion regarding the implementation of all aspects of the *Model*, with references to more complete discussions of the applicable concept in the book. Appendix 14C, the “Spread Sheet Only Form” is a “skinny downed” version of this Appendix 14B, and it contains only:

- (1) a *Guide to the Structure of the Implementing Excel Sheets*, and
- (2) the *Implementing Excel Sheets*.

In illustrating the application of this *Model*, Appendix 14C is employed in Appendix 14A in the actual DCF valuation of Dell, Inc., a publicly held corporation. The DCF valuation of Dell will be done as of February __, 2024,² the close of Dell’s first full fiscal year after the publication of the book in December 2023.

All of the *Models* (Appendices 14A, 14B, and 14C) implement the *Discounted Cash Flow (DCF) Valuation Model* discussed in chapter 14 of the book. Chapter 14 is entitled: “*CVM&A- Seven Step DCF Model for the Valuation of a Target.*” To facilitate an understanding of the central valuation concepts, the actual *Seven Steps and Sub-Steps* implementing this *Model* are highlighted in turquoise in these Appendices.

C. Access to the Appendices

All three of these Appendices are available on the Penn State Law website at

<https://elibrary.law.psu.edu/valuation/>, and they can be used by anyone, without charge, in conducting a DCF valuation.

² Dell’s fiscal year ended on this date, and it varies between the last of January and the first of February, depending on the year.

D. Purpose of the Model, Valuation of Public Targets and Beyond

As indicated, this *Model* is designed for the valuation of a domestic publicly held Target of an M&A transaction. However, with appropriate adjustments, if required, this *Model* could be utilized in the valuation of a firm that is not a public Target, including:

- (1) a closely held Target,
- (2) a free-standing publicly held corporation,
- (3) a free standing privately held corporation,
- (4) a foreign corporation, both publicly held and closely held, and
- (5) a non-corporate business, such as a partnership or limited liability company (LLC), whether or not, engaged in an M&A transaction.

However, it must be reiterated that the *Model* is designed for the explicit purpose of valuing a publicly held domestic Target.

E. How the Appendix 14C Model Is Implemented

The *Model* is implemented by employing Excel spreadsheets addressing each of the *Seven-Steps*, and, if any, each of the *Sub-Steps*. The Excel spreadsheets are (1) attached to each of Appendices 14A, 14B, and 14C; (2) introduced and illustrated in the applicable section in this Appendix 14B; (3) implemented by the “INSTRUCTIONS” at the top of the cover page for each spreadsheet; and (4) used in the valuation of Dell in Appendix 14A, as of February __, 2024.

F. The Basic Model Does Not Compute the Equity Discount Rate

The purpose of this *Generic Form CVM&A- Seven-Step DCF Model* is to provide in one place a “basic *Model*” that can be used in a DCF valuation of a publicly held Target. The term “basic

Model” must be emphasized, because this *Model* does not have many of the “Bells and Whistles” found in other *Models*, such as the Bloomberg DCF Model, which is discussed at various places throughout the book.

For example, the *Model* here sets out in summary form the Steps and Sub-Steps used in determining the Target’s cost of equity through the CAPM, including the determination of a Target’s Beta. Although chapters 7, 8, and 9 contain significant discussions of these concepts, this Appendix 14B does not apply them in determining the Target’s equity discount rate. As indicated, this *Model* employs a freely available professional source in determining the Target’s equity discount rate.

G. The DCF Parts of the Book

All of the *Seven-Steps* for doing a DCF valuation of a Target are discussed in detail in chapters 4–13, which are in the DCF part of the book.

H. No Need to Have a Computer Program in Implementing the Model; But Not “Plug and Play”

All of the data that goes into the Model is taken by hand from specified sources, so there is no need for the user to collect any data by computer program. Thus, the user of the *Model* inputs by hand the relevant data from designated sources.

That said, in many places in the Excel sheets implementing the *Model* the user will have to employ certain Excel formulas in making the computations. Thus, the *Model*, like any valuation *Model*, in places requires an exercise of judgment and is not just: “Plug and Play.”

In virtually all the circumstances the relevant information for doing a valuation of a publicly held Target for which the analyst does not have access to proprietary information can be obtained from the Target’s SEC disclosures, which are available without charge on the SEC’s website.

Thus, as seen in the application of Appendix 14A, *the Spreadsheet Only Form of Corporate Valuation of Dell*, the *Model* can be implemented by collecting by hand certain basic data regarding a publicly held Target from the SEC website. For example, as discussed in Appendix 14A, the DCF valuation of Dell, the principal financial statements used in valuing Dell are in Dell's relevant annual report on SEC Form 10K. Thus, this *Spreadsheet Only Form of Corporate Valuation of Dell*, would use this publicly available data in computing, inter alia, the Dell's:

- (1) Free Cash Flows (FCFs);
- (2) Terminal Value (TV); and
- (3) the Weighted Average Cost of Capital (WACC).

As indicated previously, in this *Model*, it is not necessary to compute Beta or the Cost of Equity Capital, because the discount rate is ascertained from a public source.

I. Potential (1) Inapplicability of a Step or Sub-Step; (2) Applicability of a Short-Cut, or (3) Required Adjustments

Although this *Model* specifically sets out each of the Steps and Sub-Steps, in many situations, the analyst might decide to collapse certain Steps or Sub-Steps. However, in doing any valuation, the analyst should make sure that each of these Steps and Sub-Steps (1) has been complied with or otherwise addressed, or (2) is inapplicable in the circumstance.

J. Limitations of the Generic Form CVM&A- Seven-Step DCF Model

It must be emphasized that this *Generic Form CVM&A- Seven-Step DCF Model* is based on certain assumptions. If the assumptions in this *Model* are not appropriate, adjustments would have to be made to the *Model*.

However, in order to keep things relatively “simple,” this *Generic Form CVM&A- Seven-Step DCF Model* proceeds on the basis of the stated assumptions, and in any valuation of a Target, if any of these basic assumptions, such as the assumption of using the Target’s performance in two of the Target’s past five years to predict the Target’s performance in the next five years, is inappropriate, then the analyst would have to make appropriate adjustments to the *Model*. For example, while the five past years are utilized in the *Model*, adjustments may have to be made to properly adjust for the COVID-19 years. These types of adjustments are not made in the valuation of Dell in Appendix 14A.

K. Use of Fiscal Year Rather Than Twelve-Month Periods in Computing Historic and Projected FCFs

In computing the Target’s Free Cash Flows (FCFs), the *Generic Form CVM&A- Seven-Step DCF Model* uses the Target’s fiscal year (or calendar year if applicable) and not the most recent trailing 12-month period. Thus, the *Model* uses (1) the Target’s FCFs as reported in the Target’s most recent annual SEC Form 10-K as the last year of the five-year projection period, and (2) the Target’s FCFs as reported in one of the Target’s annual SEC Form 10-K that covers the first year of the five-year projection period.

Thus, as will be seen, in this *Model*, the FCF calculations are done as of the last day of the Target’s most recently completed fiscal year, which in the case of Dell will be February __,

2024. Note that in using the annual Form 10-K for this purpose, the only financial documents used are those found in the Target’s (1) annual report on Form 10-K for the Target’s most recently completed fiscal year, and (2) annual report on Form 10-K for the Target’s fifth previously completed fiscal year.

Thus, for example, in the case of the valuation of Dell as of February ____, 2024 in Appendix 14A, the relevant Dell financial information will be included as Annexes to Appendix 14A.

II. APPLICATION OF THE GENERIC FORM CVM&A- SEVEN-STEP DCF MODEL IN VALUING A TARGET

A. In General

The following *Seven-Steps* in sections III through X, which include in certain cases Sub-Steps, are used in determining the value of a Target through the implementation of the *Generic Form CVM&A- Seven-Step DCF Model*. Some of the Sub-Steps are implemented through separate Excel spreadsheets. For example, Sub-Step1A (i.e., determining the Target’s past FCFs) is implemented by three “Excel spreadsheets.”

B. Application of the *Seven-Step* Process When the Target Has Multiple Lines of Business

As indicated previously, if the Target has multiple lines of business, the first *Six Steps* should be followed in valuing each line separately on the basis of, inter alia, the line’s (1) FCFs, (2) TV, (3) assumed liabilities, and (4) WACC. This is referred to here as “valuation on a business-by-business basis.” The value for each line of business is then added to reach the value of the Target.

The determination of whether a DCF analysis should be done on a business-by-business basis will be determined by the facts surrounding the Target's business. For example, in the valuation of Twitter by J.P. Morgan in connection with the acquisition by Elon Musk, Morgan assumed that Twitter is engaged in one line of business.

C. Introduction to the Balance of this Appendix 14B

1. Section III through Section XI, The Seven Steps, A Brief Summary

The balance of this Appendix 14B addresses the Seven Steps and Sub-Steps as follows:

- SECTION III, FIRST STEP AND SUB-STEPS 1A (PAST FCFS), 1B (FUTURE FCFS) AND 1C TERMINAL VALUE (TV), CHAPTERS 5 AND 6;
- SECTION IV, SECOND STEP AND SUB-STEPS 2A THROUGH 2E (FROM BETA TO CAPM, TO COST OF EQUITY, AND TO WACC, THE DISCOUNT RATE), CHAPTERS 7 TO 12;
- SECTION V, THIRD STEP: DISCOUNTING TO PRESENT VALUE THE FCFS AND TV AT THE WACC, CHAPTERS 11 AND 12;
- SECTION VI, FOURTH STEP: SUMMING THE PRESENT VALUES OF THE FCFs AND TV, ATTRIBUTABLE TO THE TARGET'S OPERATIONAL ASSETS AS DETERMINED IN SECTION III, CHAPTER 12;
- SECTION VII, FIFTH STEP: COMPUTING THE NPV OF THE OPERATING ASSETS BY, INTER ALIA, SUBTRACTING THE TARGET'S LIABILITIES, CHAPTER 12;
- SECTION VIII, THIRD, FOURTH, AND FIFTH OPTIONAL COMBINED STEPS IN COMPUTING THE NET FMV OF THE TARGET'S OPERATING ASSETS;
- SECTION IX, SIXTH STEP: ADJUSTING THE NPV FOR NON-OPERATING ASSETS, CHAPTER 13;
- SECTION X, SEVENTH STEP: DETERMINE A PER SHARE PRICE AND CONDUCT A SENSITIVITY ANALYSIS, CHAPTER 13; AND
- SECTION XI, SOME CLOSING OBSERVATIONS.

2. The Annexes; A Brief Summary

In addition, the following Annexes A through E set out excerpts, inter alia, from the following valuation cases that are discussed in the book.

- ANNEX A, ILLUSTRATING THE SEVEN STEPS: (1) A SUMMARY OF THE SEVEN STEPS, AND (2) EXCERPTS FROM APPENDIX 1H TO THE BOOK, ILLUSTRATION OF THE DCF SEVEN STEPS IN J.P. MORGAN'S DCF VALUATION IN RAI, A 2021 CASE;

- ANNEX B, EXCERPTS FROM APPENDIX 8B TO THE BOOK: LAZARD'S COMPUTATION IN 2017 OF RAI'S COST OF EQUITY AND WACC WITH THE UNLEVERING AND LEVERING OF RAI'S BETA;
- ANNEX C, EXCERPTS FROM SELECTED SECTIONS FROM APPENDIX 1E TO THE BOOK, RE VALUATION RELATED DOCUMENTS IN AOL, A 2015 CASE; AND
- ANNEX D, DISCOUNT FACTOR TABLE, FOR USE IN DETERMINING THE APPROPRIATE DISCOUNT RATE FOR BRINGING TO PRESENT VALUE THE TARGET'S FREE CASH FLOWs (FCFs) AND TERMINAL VALUE (TV).

Finally, Annex E is the following Spreadsheet Annex:

ANNEX E, THE SPREADSHEET ANNEX IN "MICROSOFT EXCEL": THE 24 EXCEL SPREADSHEETS IMPLEMENTING THE SEVEN-STEP DCF MODEL.

These 24 Excel sheets are the central part of Appendix 14C, which (1) is a "skinny down" version of this Appendix 14B, and (2) is used in implementing the valuation of Dell in Appendix 14A.

III. *FIRST STEP AND SUB-STEPs 1A (PAST FREE CASH FLOWs,*

FCFs), 1B (FUTURE FCFs) AND 1C (TERMINAL VALUE (TV)).

CHAPTERS 5 AND 6

A. In General

The *First Step* has three Sub-Steps, which require the determination of the following three elements of the *DCF Model*:

- (1) the Target's Actual FCFs for the Past Five Years (Sub-Step 1A);
- (2) the Target's Projected FCFs for the Next Five Years (Sub-Step 1B); and
- (3) the Target's Projected Terminal Value (TV) at the End of the Five-Year Projection Period (Sub-Step 1C).

In this *Model*, as will be seen, rather than focusing on the FCFs for each of the Past Five Years, the focus is only on the FCFs for the Fifth Preceding Year and the most recently completed

Fiscal Year. The FCFs for these two years are used to determine the growth rate for computing the Projected FCFs.

B. Step 1, Sub-Step 1A, Application of the Model: Excel Sheet 1 of 3: Determining the Target's Actual FCFs in the Fifth Preceding Year

1. The Actual Step 1, Sub-Step 1A, Excel Sheet 1 of 3: Determining the Target's FCFs for the Fifth Preceding Fiscal Year of the Historic Period

a) The Model

This Sub-Step 1A, Application of the Model: Excel Sheet 1 of 3: A Table Computing the FCFs for the Target's Fifth Preceding Fiscal Year of the Historic Period is set out at the end of this sentence and is attached to this document as a Model Excel form that can be used in implementing an actual valuation:

[SEE NEXT PAGE]

DCF VAL OF [TARGET's NAME]³:

STEP 1, SUB-STEP 1A, APPLICATION OF THE MODEL:

EXCEL SHEET 1 OF 3:⁴ CONSTRUCT A TABLE: COMPUTING THE UNLEVERED⁵ FCFs FOR THE TARGET's FIFTH PRECEDING YEAR OF THE HISTORIC PERIOD [STEP 1, SUB-STEP 1A, SHEET 1 OF 3, FCF FIFTH PRECEDING YEAR]

[Sources of Data: Income Statement = IS; Cash Flow Statement = CFS]

| | |
|--------------|--|
| FREE | [A] Top Line Total Revenue, INCOME STATEMENT (IS), _____, [Minus] |
| CASH | [B] Cost of Goods Sold and Services Provided, (IS), _____, [Equals] |
| FLOW | [C] Net Revenue (IS), _____, [Minus]. |
| (FCF) | [D] Total Operating Expenses, ⁶ Except (1) Depreciation & Amortization, and (2) Interest, ⁷ (IS) _____, [Equals] |
| = | [E] Pre-Tax Net Income (IS), without the Deduction for (1) Interest, and (2) Depr & Amort, _____, [Minus] |
| | [F] Interest Deducted in Computing Taxable Income, _____, [Equals] |
| | [G] Pre-Tax Net Income (IS) with Interest Deducted but not Depr/Amor, _____, [Minus] |
| | [H] Depreciation and Amortization Deducted in Computing Taxable Income, _____, [Equals] |
| | [I] Net Operations Income with all Deductions including Interest and Depreciation & Amortization, _____, [Minus] |
| | [J] Effective Combined Federal, State, and Local Taxes on Net Operations Income (see [I]), Assumed to be 25%, _____, [Equals] |
| | [K] Net Operations Income After Cash Taxes, _____, [Minus] |
| | [L] Reversing the Tax Savings from the Int Ded= Amount of Interest X 25% Tax Rate, ⁸ _____, [Equals] |
| | [M] Net Income After Cash Taxes Increased by Reversal of Tax Saving from Interest Deduction, _____, [Plus] |
| | [N] Reversing the Deduction for Depreciation & Amortization, which Are Not Cash Outlays, _____, [Equals] |
| | [O] FCF From Operations Before Deductions for (1) Increases in Working Capital, and (2) CapX, _____, [Minus] |
| | [P] Increase in Working Capital, _____, [Equals] |
| | [Q] FCF From Operations Before Deduction for CapX, _____, [Minus] |
| | [R] Capital Expenditures (CFS), _____, [Equals] |
| | [S] BOTTOMLINE FCF FOR 5TH PRIOR YR OF HISTORIC PERIOD: _____. |

³ The name of the Target will appear in this and other similar brackets.

⁴ I thank my Research Assistant, Abdulrahman Abdullah H Azzouni, for his assistance with this table.

⁵ As discussed in the book, there is no deduction for interest in computing FCFs.

⁶ Expenses here do not include the Cost of Good and Services Sold, which are deducted above.

⁷ Depreciation & Amortization and Interest are addressed separately.

⁸ The FCF statement is constructed without taking into account the Target's debt, which is subtracted from the DCF valuation of the asset side of the balance sheet.

b) How Employed

This Step 1, Sub-Step 1A, Sheet 1 of 3 (the Target's FCFs in the fifth preceding year of the Historic Period), together with Step 1, Sub-Step 1A, Sheet 2 of 3 (the Target's FCFs in the fifth and last year of the Historic Period) are used in Step 1, Sub-Step 1A, Sheet 3 of 3 in computing the growth rate of FCFs between (1) such fifth preceding year, and (2) such last year both of the Historic Period. This growth rate is used in Step 1, Sub-Step 1B, Sheet 1 of 1 in projecting the Target's FCFs during the five-year Projection Period.

2. Description of the Excel--Plus and Minus Mathematical Operations

The mathematical operations in this Step 1, Sub-Step 1A, Sheet 1 of 3 only involve addition and subtraction. These two operations are illustrated as follows.

The subtraction operation can be illustrated from the following Lines [A] through [C] of this Sheet 1 of 3:

[A] **Top Line Total Revenue, INCOME STATEMENT (IS), _____,**
[Minus]
[B] **Cost of Goods Sold and Services Provided, (IS), _____,**
[Equals]
[C] **Net Revenue, _____,**

Line [A] contains the Top Line Total Revenue; the next line merely specifies the mathematical operation in brackets, here [Minus]; Line [B] sets out the item that is being added or subtracted; the next line merely contains the word [Equals], which indicates that the final line [C] will contain the result of the operation; and in displaying the result of the operation, line [C] contains the Excel mathematical operation on lines [A] and [B], which is here: Line [A] – Line [B], which in Excel is:

Equal Cell [A], assume [J3] - Cell [B], assume J5, or, actually:
=J3-J5

If rather than subtraction, addition operation were involved, the operation would look like these lines of Step 1, Sub-Step 1A, Sheet 1 of 3:

[M] Net Income After Cash Taxes Increased by Reversal of Tax Saving from Interest Deduction, _____,
[Plus]
[N] Reversing the Deduction for Depreciation & Amortization, which Are Not Cash Outlays, _____,
[Equals]
[O] FCF From Operations Before Deductions for (1) Increases in Working Capital, and (2) CapX, _____,

In displaying the result of this operation, line [O] contains the Excel mathematical operation on lines [M] and [N], which is here: Line [M] + Line [N], which in Excel is:

Equal Cell [M], assume [J27] + Cell [N], assume J29, or, actually:
=J27+J29

3. Hypothetical Facts Illustrating Step 1, Sub-Step 1A, Excel Sheet 1 of 3

The use of this Model in computing the FCFs for a Fifth preceding year is illustrated in the attached Excel sheet entitled [STEP 1, SUB-STEP 1A, SHEET 1 OF 3, FCF FIFTH PRECEDING YEAR]. In computing the Target's FCFs for the Fifth preceding fiscal year, the Model relies on the following assumed facts for that Fifth preceding fiscal year:

- [1] Total Revenue is \$100M;
- [2] Cost of Goods Sold (CGS) is \$20M;
- [3] Total Operating Expenses is \$60M, consisting of (1) Interest of \$20M, (2) Depreciation, and Amortization of \$15M, are (3) salaries, rent, and other general expenses of \$25M;⁹

⁹ Note that Operating Expenses are for such things as salaries, general maintenance, and similar expenses that are not directly related to the cost of manufacturing of inventory, which is the CGS.

- [4] Taxable Income is \$20M, that is: \$100M-\$20M (CGS)-\$20M (Interest)-\$15M (Depreciation and Amortization)-\$25M (Salaries and other general expenses);
- [5] Regular Taxes is at a combined State-Local-Federal Rate of 25% of Taxable Income, which is \$20M resulting in a Regular Tax Liability of \$5M;
- [6] Unlevered Cash Taxes (that is, taxes without a deduction for interest) are \$10M, that is, (1) a tax liability of 25% on Unlevered Taxable Income of \$40M, that is, \$20M of regular taxable income plus \$20M from reversal of the interest deduction;¹⁰
- The Increase in Working Capital is \$2M, i.e., 2% of revenues.
- Capital Expenditures are \$5M, i.e., 5% of revenues; and

4. A Reminder on the Non-Deductibility of Interest in Computing FCFs and the Deductibility of Taxes in Computing the Net Present Value of Target

It is important to note that the deduction for interest is eliminated in computing FCFs.

Consequently, the taxes that are deducted in computing FCFs are the taxes that would have been paid if the Target had no interest expense. However, the tax liabilities, like any other liabilities, are deducted from the present value of the Target's FCFs and TV in determining the Net Fair Market Value of the Target.

¹⁰ It is important to note that even though the deduction for interest is eliminated in computing the FCFs in the DCF Model, the liabilities are deducted from the present value of the FCFs and TV in determining the Net Fair Market Value of the Target.

C. Step 1, Sub-Step 1A, Application of the Model: Excel Sheet 2 of 3: Determining the Target's Actual FCFs in the Fifth Year of the Historic Period

1. The Actual Step 1, Sub-Step 1A, Excel Sheet 2 of 3: Determining the Target's FCFs for the Most Recent Fiscal Year

a) The Model

The full title of this Sub-Step is: *Sub-Step 1A, Application of the Model, Excel Sheet 2 of 3: A Table Computing the FCFs for the Target's Most Recent Fiscal Year, i.e., the Last Full Fiscal Year in the Historic Period.*

This Model is set out below and is attached to this document as a Model Excel form that can be used in implementing an actual valuation.

DCF VAL OF [TARGET's NAME] ¹¹:

**STEP 1, SUB-STEP 1A, APPLICATION OF THE MODEL: EXCEL SHEET 2 OF 3:¹²
CONSTRUCT A TABLE: COMPUTING THE UNLEVERED¹³ FCFS FOR THE TARGET'S
MOST RECENT FISCAL YEAR, I.E., THE LAST FULL FISCAL YEAR IN THE HISTORIC
PERIOD**

| [Source of Data: Income Statement = IS; Cash Flow Statement = CFS] | |
|--|---|
| FREE | [A] Top Line Total Revenue , INCOME STATEMENT (IS), _____, [Minus] |
| CASH | [B] Cost of Goods Sold and Services Provided , (IS), _____, [Equals] |
| FLOW | [C] Net Revenue (IS), _____, [Minus]. |
| (FCF) | [D] Total Operating Expenses , ¹⁴ Except (1) Depreciation & Amortization, and (2) Interest, ¹⁵ (IS) _____,; [Equals] |
| = | [E] Pre-Tax Net Income (IS), without the Deduction for (1) Interest, and (2) Depr & Amort, _____, [Minus] |
| | [F] Interest Deducted in Computing Taxable Income , _____, [Equals] |
| | [G] Pre-Tax Net Income (IS) with Interest Deducted but not Depr/Amor , _____, [Minus] |
| | [H] Depreciation and Amortization Deducted in Computing Taxable Income , _____, [Equals] |
| | [I] Net Operations Income with all Deductions including Interest and Depreciation & Amortization , _____, [Minus] |
| | [J] Effective Combined Federal, State, and Local Taxes on Net Operations Income (see [I]), Assumed to be \$25%, _____, [Equals] |
| | [K] Net Operations Income After Cash Taxes , _____, [Minus] |
| | [L] Reversing the Tax Savings from the Int Ded= Amount of Interest X 25% Tax Rate , ¹⁶ _____, [Equals] |
| | [M] Net Income After Cash Taxes Increased by Reversal of Tax Saving from Interest Deduction , _____, [Plus] |
| | [N] Reversing the Deduction for Depreciation & Amortization, which Are Not Cash Outlays , _____, [Equals] |
| | [O] FCF From Operations Before Deductions for (1) Increases in Working Capital, and (2) CapX , _____, [Minus] |
| | [P] Increase in Working Capital , _____, [Equals] |
| | [Q] FCF From Operations Before Deduction for CapX , _____, [Minus] |
| | [R] Capital Expenditures (CFS) , _____, [Equals] |
| | [S] BOTTOMLINE FCF FOR THE MOST RECENT YR OF THE HISTORIC PERIOD: _____ |

¹¹ The name of the Target will appear in this and other similar brackets.

¹² I thank my Research Assistant, Abdulrahman Abdullah H Azzouni, for his assistance with this table.

¹³ As discussed in the book, there is no deduction for interest in computing FCFS.

¹⁴ Expenses here do not include the Cost of Good and Services Sold, which are deducted above.

¹⁵ Depreciation & Amortization and Interest are addressed separately.

¹⁶ The FCF statement is constructed without taking into account the Target's debt, which is subtracted from the DCF valuation of the asset side of the balance sheet.

b) How Employed

This Step 1, Sub-Step 1A, Sheet 2 of 3 (the Target's FCFs in the last year of the five year Historic Period) together with Step 1, Sub-Step 1A, Sheet 1 of 3 (the Target's FCFs in the first year of the Historic Period) are used in Step 1, Sub-Step 1A, Sheet 3 of 3 in computing the growth rate of FCFs between the first and last years of the five year Historic Period. As indicated, this growth rate is used in Step 1, Sub-Step 1B, Sheet 1 of 1 in projecting the Target's FCFs during the five-year Projection Period.

2. Description of the Plus and Minus Mathematical Operations in Excel, See section III.B.2

3. Hypothetical Facts Illustrating Step 1, Sub-Step 1A, Excel Sheet 1 of 3, See section III.B.3

The Excel sheet is prepared on the basis of the doubling of each of the inputs in section VI.B.3.

4. A Reminder on the Non-Deductibility of Taxes in Computing FCFs and the Deductibility of Taxes in Computing the Net Present Value of Target See section III.B.4

D. Step 1, Sub-Step 1A, Application of the Model: Excel Sheet 3 of 3: Determining the Target's Rate of Growth in FCFs in the Five Years of the Historic Period

1. The Actual Step 1, Sub-Step 1A, Excel Sheet 3 of 3: Determining the Rate of Growth of FCFs During the Five-Year Historic Period

a) The Model

This Sub-Step 1A, Application of the Model, Excel Sheet 3 of 3: A Table Computing the Rate of Growth in FCFs Between (1) The Target’s Fifth Preceding Fiscal Year of the Historic Period, and (2) The Target’s Last Full Fiscal Year in the Historic Period, is set out below.

The attached Excel sheet for this Step 1, Sub-Step 1A, Sheet 3 of 3, which can be used in implementing an actual valuation, is in a different and more complex form than the Word table below. However, both forms produce the same substantive results.

DCF VAL OF [TARGET’s NAME] ¹⁷:

STEP 1, SUB-STEP 1A, APPLICATION OF THE MODEL:

EXCEL SHEET 3 OF 3:

A TABLE COMPUTING THE COMPOUND ANNUAL GROWTH RATE (CAGR) IN FCFs BETWEEN:

(1) THE TARGET’s FIFTH PRECEDING FISCAL YEAR OF THE HISTORIC PERIOD,

AND

(2) THE TARGET’s LAST FULL FISCAL YEAR IN THE HISTORIC PERIOD¹⁸

| [COLUMN A] DESCRIPTION OF [A] THE TARGET’s FCF IN THE APPLICABLE HISTORIC PERIOD IN ROWS [1] & [2] & [B] THE CAGR BETWEEN ROWS [1] AND [2] IN ROW [3] | [COLUMN B] DOLLAR AMOUNTS OF THE APPLICABLE FCF IN ROWS [1] AND [2]; AND COMPUTATION OF THE CAGR IN ROW [3] |
|--|--|
| [ROW 1] FCF, FIFTH PRECEDING YEAR: SUB-STEP 1A, EXCEL SPREADSHEETS 1 OF 3 | |
| [ROW 2] FCF MOST RECENT FISCAL YEAR: SUB-STEP 1A, EXCEL SPREADSHEETS 2 OF 3 | |
| [ROW 3] THE CAGR THAT CAUSES THE AMOUNT IN [COLUMN A], [ROW 1] TO EQUAL THE AMOUNT IN [COLUMN A], [ROW 2]¹⁹ | |

¹⁷ The name of the Target will appear in this and other similar brackets.

¹⁸ I thank my Research Assistant, Abdulrahman Abdullah H Azzouni A, Abdullah, for his “DOUBLE” special assistance with this Sub-Step.

¹⁹ This rate of return is the rate that would cause the FCFs for the first year in the Historic Period to equal the FCFs in the last year of the Historic Period (i.e., the most recently completed fiscal year).

b) How Employed

This Step 1, Sub-Step 1A, Excel Sheet 3 of 3 computes the Target’s Compound Annual Growth Rate (CAGR) in FCFs during the five-year Historic Period. This CAGR is used in Step 1, Sub-Step 1B in projecting the FCFs during each of the years in the Projection Period.

2. Description of the Excel
Mathematical Operations for
Computing the Compound Annual
Growth Rate (CAGR)

The mathematical operation for computing the CAGR in this Step 1, Sub-Step 1A, Sheet 3 of 3 is very complex, but fortunately it can be implemented by an Excel formula that requires the following three inputs, which generally will be available:

- (1) the FCFs for the first year of the Historic Period, which is Row 1 of column [B] of the above table (the First Year FCFs);
- (2) the FCFs for the fifth year of the Historic Period, which is Row 2 of column [B] of the above table (the Fifth Year FCFs); and
- (3) the number of years in the Historic Period, which in this case is five years.

In words, the Excel formula for computing the Compound Annual Growth Rate (CAGR) in Step 1, Sub-Step 1A, Sheet 3 of 3 is:

$$=(\text{The FCFs for the First Year}/\text{The FCFs for the Fifth Year})^{(1/\text{Number of Years})-1}$$

A chart available on the Internet²⁰ gives the following descriptions and illustration of the meaning of a “^”, which is used in the formula:

| What it is | How it is read | How it is used | Sample expression |
|------------|-------------------------|----------------|-------------------|
| Carat | ... to the power of ... | exponent | $2 ^ 5 = 32$ |

²⁰ Mathematical Symbols, at <https://www.techtargget.com/searchdatacenter/definition/Mathematical-Symbols>, visited Dec. 14, 2023.

The actual formula for computing the CAGR in EXCEL SHEET: STEP 1, SUB-STEP 1A, SHEET 3 OF 3 is as follows:

$$\text{CAGR} = (\text{J10}/\text{J11})^{(1/\text{J12})} - 1$$

3. An Example

For example, assume that the FCF in the Fifth Preceding fiscal year is \$100M, and the FCF in the Most Recent fiscal year is \$150M, indicating that the FCF has grown by \$50M over that five-year period. In such case, the compounded annual growth rate in FCFs (i.e., assuming new FCFs on past accumulated FCFs) over this five-year period is approximately 8.4%.²¹

As will be seen in the next section the Rate of Growth in FCF's during the Historic Period., that is, the Compounded Annual Growth Rate (CAGR), is used in Step 1B in projecting the Target's FCFs for each of the five Projection Years.

E. Step 1, Sub-Step 1B, Application of the Model: Excel Sheet 1 of 1: Determining the Target's Projected Five-Year FCF Results

1. The Actual Step 1, Sub-Step, 1B Excel Sheet 1 of 1: Determining the Target's Projected FCFs During Each of the Five-Years in the Projection Period

a) The Model

This Step is implemented pursuant to an Excel spreadsheet that (1) reflects the following structure, and (2) is attached to this document as a Model Excel sheet that can be used in implementing an actual valuation.

²¹ This percentage was calculated on Omni Calculator at <https://www.omnicalculator.com/finance/cagr> (visited Nov. 2, 2023). The only inputs were (1) the initial amount, (\$100M), (2) the ending amount \$150M, and (3) the number of years in the holding period.

DCF VAL OF [TARGET's NAME] ²²:

STEP 1, SUB-STEP 1B, APPLICATION OF THE MODEL:

EXCEL SHEET 1 OF 1:

COMPUTE PURSUANT TO THE COMPOUND ANNUAL GROWTH RATE (CAGR) IN THE TARGET's FCFs, DETERMINED PURSUANT TO SUB-STEP 1A, EXCEL SHEET

3 OF 3,

THE PROJECTED FREE CASH FLOWS DURING EACH OF THE YEARS IN THE FIVE-YEAR PROJECTION PERIOD.

The computation is made pursuant to the principles in the following table:

| | [COL. A] FCFs LAST YR, HIST. PERIOD | [COL. B] FCFs YEAR 1 PROJECT PERIOD | [COL. C] FCF's YEAR 2 PROJECT PERIOD | [COL. D] FCFs YEAR 3 PROJECT PERIOD | [COL. E] FCFs YEAR 4 PROJECT PERIOD | [COL F] FCFs YEAR 5 PROJECT PERIOD |
|---|--|--|---|--|--|---|
| [ROW 1] HIST CAGR²³ IN TC's FCFs, STEP 1A, SHEET. 3 OF 3²⁴ | NA | | | | | |
| [ROW 2, COL A]: FCFs LAST YR HIST. PERIOD | | NA | NA | NA | NA | NA |
| [ROW 3, COLs B- F]: PROJ. FCFs, BASED ON CAGR²⁵ | NA | | | | | |

²² The name of the Target will appear in this and other similar brackets.

²³ CAGR, as indicated, this means Compound Annual Growth Rate.

²⁴ This is the rate of growth in FCFs during the Historic Period, and it is assumed that this rate of growth applies throughout the Five-Year Projection Period.

²⁵ The assumption is that all earnings are retained. This is the right decision because an Acquiring Corporation would have access to all earnings, distributed or not.

b) How Employed

This Step 1, Sub-Step 1B computes, at the Target's Compound Annual Growth Rate (CAGR), the projected FCFs in each of the five years during the Projection Period. Each of these projected FCFs are, pursuant to *Third Step* discounted to present value at the discount rate determined pursuant to the *Second Step*.

2. Description of the Excel Formula for Predicting the Growth in FCFs During the Projection Period

The Growth in FCFs is computed in EXCEL SHEET, STEP 1, SUB-STEP 1B, SHEET 1 OF 1, PROJECTING THE FCFs FOR FIVE YEAR PROJECTION PERIOD AT THE CAGR; \$ IN MILLIONS OR BILLIONS. Column C, Row 25 shows that the growth rate in the FCFs from year to year, that is, the CAGR, is 15%. This 15% CAGR is also shown Row 9 of Columns D through H.

The computations of the projected FCFs for years 1 through 5 of the Projection Period are made by multiplying the FCFs for the preceding period by 1+ CAGR, as shown in this Excel formula:

$$=(1+\text{The Percentage Increase})*(\text{The Starting Amount});$$

The asterisk means "Multiply by"

This formula is illustrated by the following example:

Assume that "The Percentage Increase" is 15%, and "The Starting Amount," which is the "Ending Amount for the Prior Period," is \$30, then

$$=(1+\text{The Percentage Increase})*[\text{The Starting Amount}] =$$

$$=(1+.15)*30 =$$

34.5, The Projection Year's Final Amount.

In Excel both “The Percentage Increase” and the “Starting Amount” can be identified by reference to the cells in which they are located. This is illustrated as follows for the Projected FCFs for the first year of the Projection Period: (1) a Percentage Increase of 15%, and (2) a Starting Amount of 30:

$$=(1+\text{The Percentage Increase})*[\text{The Starting Amount}] =$$

$$=(1+.15)*30 =$$

$$=(1+C25)*C16=$$

$$=(1+.15)*30 = \text{First Projection}$$

34.5, The Year’s Final Amount, which is in cell D26

As indicated, in this Model the \$34.5 is referred to as a “Projection Year’s Final Amount.”

For each of the subsequent years, the basic formula continues, except the last cell in the current year’s equation becomes the prior year’s Projection Year’s Final Amount. So, for example for the second year in the projection period the formula becomes:

$$=(1+C25)*D26=$$

$$=(1+.15)*34.5 =$$

\$39.9, The Year’s Final Amount, which is in cell E26

This same process is followed in computing the Projection Year’s Final Amount for the third, fourth, and fifth Projections Years, because for each of these subsequent years in the Projection Period the Starting Amounts in the equation are the prior Year’s Final Amount.

In this Model, the FCF for each of the Projection Years is computed by hand, one after the other, on Lines D26 to H26, pursuant to the above formula.

F. Step 1, Sub-Step 1C, Application of the Model: Determining the Target's Terminal Value (TV) with the Free Cash Flow to the Firm (FCFF) Gordon Growth Model (GGM), i.e., the FCFF-GGM

1. Introduction

Sub-Step 1C, chapter 6, deals with the projection of the Target's Terminal Value (TV).

Both (1) the projections of each of the FCFs during the projection period, and (2) the TV are discounted at the applicable discount rate, i.e., the Weighted Average Cost of Capital (WACC), in in the Third Step to determine the fair market value of the Target's operating assets. As demonstrated in chapter 6, there are many different ways of projecting the Target's TV. The one used in this Model is the Free Cash Flow to the Firm (FCFF) Gordon Growth Model (FCFF-GGM). The discussion here assumes that the reader is basically familiar with the discussion in Appendix 14B of the FCFF-GGM

2. The "Perpetual Growth Rate Assumption" vs. the "Sale Assumption" in Determining TV

It is important to note that the TV used in this DCF Model is based on the assumption that after the Projection Period, the Target will grow at the growth rate discussed below forever. This is a common assumption in determining the TV. In contrast with this perpetual growth rate assumption, in some DCF Model s the TV is determined by use of a Comparable Transactions, or similar, technique focusing on what the Target could likely be sold at after the Projection Period.

3. A Common Feature of the Various “Gordon Growth” Related Models Discussed Here

As will be seen below, in each of the DCF methods for determining TV discussed here, the TV is calculated by:

First, ascertaining the Projected FCF or dividend for the year after the last year of the Projection Period, and

Second, dividing the Projected FCF or dividend by the difference between (1) the discount rate applicable to the Target, and (2) the growth rate of the economy.

With this Gordon Growth Model, the higher the expected growth rate of the economy, the lower the denominator in the Model, and higher the TV. As will be seen, in the standard Gordon Growth Model, the TV is determined by reference to the Target’s dividend; however, in the Model employed here, the TV is determined by reference to the Target’s FCFs.

4. Determining a Target’s Terminal Value Through the Use of the FCFF-GGM

a) The Basic FCFF-GGM Formula

In using the FCFF-GGM to determine the Target’s Terminal Value (TV), the following formula is used:

$$TV_t = FCFF_{n+1} / (r_w - l_g).$$

This formula is saying that the Target’s Terminal Value is equal to:

(1) the FCFF in the next period after the last year of the Projection Period ($FCFF_{n+1}$),

Divided by

(2) r_w , which is the Weighted Average Cost of Capital (WACC) minus the economy's Long Term Growth Rate (l_g).

b) The FCFF in the Next Period

The “FCFF_{n+1}” is more accurately referred to as “FCFF_{t+1}”, or “FCFF in the year after the Terminal Year.” Thus, as applied in this context, the FCFF_{n+1} is the FCFF for the final Projection Period, that is, in this Model, the fifth period, multiplied by 1 plus the growth rate.

c) The Determination of the WACC

As explained, the r_w in the formula is the Weighted Average Cost of Capital (WACC). In this Model, the WACC is not determined until the Second Step below. Thus, the computation of the TV pursuant to this Step 1C is based in part on the determination of the WACC in Step 2.

As will be seen in the discussion below of the Second Step, the WACC is also the discount rate utilized in discounting to present value the Target's FCFs and TV. Thus, in this Model, WACC is doing double duty: (1) it is an element in determining the TV; and (2) it is the discount rate for determining the Present Value of both the FCFs and the TV.

d) Use of WACC in Determining Terminal Value (TV)

The use of WACC in determining the Target's TV pursuant to the above formula is illustrated in the following facts:

- (1) the FCFF in the fifth year of the Projection Period is \$100M;
- (2) the rate of growth in in FCFF is 5%, thus causing the FCFF_{n+1} to be \$105M;
- (3) the WACC (r_w) is 6%; and
- (4) the long-term growth rate of the economy is 2%.

In such case, the Terminal Value is \$5.2 Billion, computed as follows:

$$TV_t = FCFF_{n+1} / (r_w - lg).$$

$$TV_t = [FCFF_{n+1} (\$105M)] [DIVIDED BY] [r_w (6\%) - lg(2\%)]$$

$$TV_t = [\$105M] [DIVIDED BY] [4]$$

$$TV_t = \$5.2 \text{ Billion}$$

5. The Actual Step 1, Sub-Step 1C, Excel Sheet 1 of 1: Determining the Target's Terminal Value (TV) through the FCFF-GGM

a) The Model

This Model is implemented in the following Sub-Step 1C table, where:

- $FCFF_{n+1}$, means the Free Cash Flow to the Firm for the year immediately after the last year of the Projection Period, see Instructions below;
- r_w , means the Target's Weighted Average Cost of Capital, see Instructions below; and
- lg , means the long-term growth rate of the economy, see Instructions below.

DCF VAL OF [TARGET'S NAME] ²⁶:

STEP 1, SUB-STEP 1C, APPLICATION OF THE MODEL:

EXCEL SHEET 1 OF 1:

DETERMINING THE TARGET'S TV THROUGH THE USE OF THE FCFF-GGM

$$TV_t = FCFF_{t+1} / (r_w - lg)$$

| | | | | | | | |
|----------------|-----------------------|---------------|---------------------------|----------------|-----------------------|--------------|------------|
| THE | TV_t | EQUALS | FCFF_{t+1} | DIVIDED | [r_w | MINUS | lg] |
| FORMULA | [1] | | [2] | BY | [3] | | [4] |
| = | | | | | | | |

²⁶ The name of the Target will appear in this and other similar brackets.

Thus, the formula is: $TV_t = FCF_{t+1} / [r_w - lg]$. As indicated, the Instructions below, address the terms in this equation.

b) Instructions to Step 1, Sub-Step 1C

The $FCFF_{t+1}$, r_w , and lg terms in this Sub-Step 1C are computed pursuant to the following Instructions:

DCF VAL OF [HYPO-TC]²⁷ STEP 1, SUB-STEP 1C: APPLICATION OF THE MODEL: INSTRUCTIONS: THE AMOUNTS ASSOCIATED WITH THE KNOWN ELEMENTS OF THIS EQUATION ARE DETERMINED PURSUANT TO THE FOLLOWING INSTRUCTIONS:

| $FCFF_{t+1}$ | r_w | lg |
|---|--|--|
| <p>THIS AMOUNT IS IN THE LAST COLUMN OF SUB-STEP 1B, I.E., THE FCFs FOR THE FIFTH YEAR OF THE HISTORIC PERIOD, INCREASED BY 1+g. THUS, IF THE FIFTH YEAR FCF IS \$100M AND THE “g,” I.E., GROWTH RATE, IS 5%, THEN THE $FCFF_{n+1}$ WOULD BE \$105M.</p> <p>THE GROWTH RATE USED IN THIS MODEL IS THE COMPOUND ANNUAL GROWTH RATE (CAGR) DETERMINED PURSUANT TO SUB-STEP 1A, EXCEL SHEET 3 OF 3.</p> | <p>THIS IS THE WEIGHTED AVERAGE COST OF CAPITAL, WHICH IS COMPUTED IN THE THIRD STEP: DISCOUNTING TO PRESENT VALUE THE FCFs AND TV AT THE WACC. IN THIS CASE, AN ITEM COMPUTED IN A LATER STEP IS USED IN COMPUTING THE TERMINAL VALUE IN THIS SUB-STEP 1C.</p> | <p>THIS IS THE LONG-TERM GROWTH RATE FOR THE ECONOMY. THE U.S. DEPARTMENT OF LABOR STATISTICS SAYS THE FOLLOWING ABOUT THIS GROWTH RATE: “The [BLS] projects the economy to grow by 2.1 percent each year, on average, from 2021 to 2031. . . . [T]his would be slightly faster than the 2.0-percent growth averaged over the previous decade but slower than the growth rates in the 1980s and 1990s.”²⁸ THE RATE USED IN THIS MODEL IS 2%.</p> |

²⁷ The name of the Target will appear in this and other brackets.

²⁸ Bureau of Labor Statistics, *Projections of the U.S. economy, 2021–31*, at <https://www.bls.gov/careeroutlook/2022/data-on-display/economic-growth.htm#:~:text=Career%20Outlook%20article%20page&text=The%20U.S.%20Bureau%20of%20Labor,average%2C%20from%202021%20to%202031>, Visited Nov. 3, 2023.

c) How Employed

This Step 1 Sub-Step 1C computes pursuant to a formula that employs the Target's Compound Annual Growth Rate (CAGR), the projected Terminal Value of the Target. This TV will be discounted to present value at the WACC.

6. Reasons for Using the FCFF-GGM and Not an EBITDA Multiple of Similar Multiple in Computing TV

As indicated in the book, an alternative to using the FCFF-GGM is to use an EBITDA Multiple Model for determining the TV. One source gives the following succinct explanation of why it is better to use a FCFF-GGM, or similar Model, than the EBITDA Multiple Model:

[The EBITDA Multiple Model] approach suffers from a significant conceptual problem: It incorporates current market valuations within the DCF, which arguably defeats the whole purpose of the DCF. Making matters worse is the fact that the terminal value often represents a significant percentage of the value contribution in a DCF, so the assumptions that go into calculating the terminal value are all the more important.²⁹

G. Summarizing the First Step

This *First Step*, which focuses on the determination of the Target's Free Cash Flows (FCFs) and Terminal Value (TV) has three Sub-Steps, 1A, 1B and 1C, and Sub-Step 1A is implemented with three different Excel Sheets: 1 of 3, 2 of 3 and 3 of 3. As indicated, the determination of the Terminal Value (TV) in Sub-Step 1C is based in part on the WACC, which is determined in the Second Step.

²⁹ DCF Model Fundamentals Guide, *DCF Modeling Core Concepts*, available on the Internet, visited Dec. 16, 2023.

Upon completion of these Sub-Steps, the analyst will have projected the Target's (1) FCFs for the first and last year of the Projection Period, and (2) TV at the end of the last year of the Projection Period. As indicated, the FCF and TV projections are key elements of a DCF analysis.

Now, on to the *Second Step*, the computation of the Discount Rate, which also has many Sub-Steps.

IV. SECOND STEP AND SUB-STEP 2A THROUGH 2E (FROM BETA, TO CAPM, TO COST OF EQUITY, AND TO WACC, THE DISCOUNT RATE), CHAPTERS 7 TO 12

A. Introduction: All About Computing the Discount Rate (DR)

The *Second Step* has five Sub-Steps, which are employed in the determination of the Appropriate Discount Rate for discounting, in the *Third Step*, the Target's Free Cash Flows (FCFs) and Terminal Value (TV) to Present Value (PV). Both the FCFs and TV are determined in the *First Step*, with its three Sub-Steps, which are discussed immediately above.

While the *First Step*, with its three Sub-Steps, focuses on what to discount (i.e., FCFs and TV), this *Second Step*, with its five Sub-Steps, focuses on the determination of the Discount Rate (DR) for use in discounting to Present Value (PV) the Target's FCFs and TV. The actual discounting process is addressed in the *Third Step*.

The DR, which is determined in Sub-Step 2E, the last of the Step 2's Sub-Steps, is the Weighted Average Cost of Capital (WACC), which is the Target's blended cost of debt and equity capital. Thus, the end result of the five Sub-Steps is the production of an estimate of the Target's cost of capital (i.e., WACC) for use in *Sixth Step* in discounting to PV the Target's FCFs and TV. Also,

as indicated in the discussion of the *First Step*, the WACC is also used in computing the Target's Terminal Value.

This *Second Step* is: "All about the determination of the DR, which is the WACC." The DR is used in the *Third Step: Discounting to Present Value the FCFs and TV at the WACC*, section V.

B. Introduction to the Five Sub-Steps of Step 2, i.e., Sub-Steps 2A to 2E for Implementing the CAPM

As indicated, in the DCF Model, the WACC is the Discount Rate (DR) that is used in discounting to Present Value (PV) the Target's FCFs and TV. The WACC is the end result (i.e., Sub-Step 2E) of the following five Sub-Steps:

- **Sub-Step 2A**, section IV.C, for use in CAPM, determine (1) the Risk-Free Rate (RFR), (2) the Expected Return on the Market (ERM), and (3) the Market (that is, Equity) Risk Premium (MRP or ERP), addressed in chapter 7).
- **Sub-Step 2B**, section IV.D, for use in CAPM, determine the Target's Beta, which is a measure of the movements of the price of the Target's stock relative to movements in the equity market, such as the S&P 500 (chapter 8). If the Beta is:
 - 1, then the stock moves in lock-step with the market, has the same risk as the market generally, and CAPM results in a rate that is equal to the market's average return;
 - less than 1, then the stock is less risky than the market and will require a return that is less than the market's average return; and
 - greater than 1, then the stock is riskier than the market generally and will require a return that is more than the market's average return.

In determining Beta it may be necessary to employ the levering, unlevering, and related processes discussed in chapter 8. These concepts are generally required when there are substantially different levels, percentage wise, of debt in the capital structures of the Target and the companies used in determining the cost of equity. The presumption in this Model is that the level of debt of all the companies used in the analysis does not have a significant impact on the computation of Beta. Also, as will be seen, rather than actually computing a Beta for the Target, this Model looks to an external source for the determination of the Target's Beta.

- **Sub-Step 2C**, section IV.F, determine the all-equity discount rate for the Target's FCFs and TV computed in the *First Step*, by bringing together the elements of CAPM, that is,
 - the RFR, Sub-Step 2A;
 - the ERM, Sub-Step 2A;
 - the ERP, Sub-Step 2A; and
 - the Beta, Sub-Step 2B.

See chapter 9.

- **Sub-Step 2D**, section IV.G, determine the Cost, that is, the required return, of the Target's Debt (COD) and Preferred stock (COP) (chapter 10).
- **Sub-Step 2E**, section IV.H, finally, determine the discount rate through the WACC, which takes into account the Costs of the Target's Debt, Preferred stock, and Common stock (chapter 11).

C. Step 2, Sub-Step 2A, Application of the Model: for Use in CAPM: Determine: (1) the Risk Free Rate (RFR), (2) the Expected Return on the Market for Equities (ERonME), and (3) the Equity Risk Premium (ERP) also Known as the Market Risk Premium (MRP), Chapter 7

1. The Actual Step 2, Sub-Step 2A, Excel Sheet 1 of 3: Determining the Risk-Free Rate (RFR) for Use in Computing the Equity Risk Premium (ERP) in CAPM

a) The Model

This rate is included in the *Model* in the following Excel sheet:

DCF VAL OF [TARGET's NAME] ³⁰:
STEP 2, SUB-STEP 2A: APPLICATION OF THE MODEL:
FOR USE IN CAPM:
EXCEL SHEET 1 OF 3:
DETERMINE THE RISK-FREE RATE, I.E., THE TREASURY's 10 YEAR T-
NOTE RATE,
AS OF
THE LAST DATE SUCH RATE WAS AVAILABLE IN THE CURRENT MONTH

b) How Employed

This Step 2, Sub-Step 1A, Sheet 1 of 3 simply produces the Risk-Free Rate for use in the CAPM, which is addressed below.

³⁰ The name of the Target will appear in this and other similar brackets.

2. The Actual Step 2, Sub-Step 2A,
Excel Sheet 2 of 3: Determining the
Expected Return on Market Equity
(ERonME) for Use in CAPM

a) The Model

This Expected Return on Market Equity (ERonME) is included in the *Model* in the following
Excel sheet:

DCF VAL OF [TARGET's NAME] ³¹:
STEP 2, SUB-STEP 2A, APPLICATION OF THE MODEL:
EXCEL SHEET 2 OF 3:
THE ANNUAL EXPECTED RETURN ON THE MARKET FOR EQUITIES
(ERonME):
ASSUMED TO BE 10%, WHICH WILL BE USED UNTIL CHANGED BY THE
AUTHOR

b) How Employed

As explained in the Book, based on a 2023 analysis of equity returns, the ERonME is projected to be 10% per annum. Of course, from year to year, this return will vary from sharply negative to sharply positive. This ERonME is an element in the CAPM, which is used in determining the required equity discount rate.

3. The Actual Step 2, Sub-Step 2A,
Excel Sheet 3 of 3: Determining the
Equity Risk Premium (ERP) for Use in
bbCAPM by Deducting the RFR from
the ERonME

a) The Model

This ERP, or Market Risk Premium (MRP), is included in the *Model* in the following form of
Excel sheet:

³¹ The name of the Target will appear in this and other similar brackets.

**DCF VAL OF [TARGET's NAME] ³²;
STEP 2, SUB-STEP 2A, APPLICATION OF THE MODEL:
FOR USE IN CAPM:
EXCEL SHEET 3 OF 3:
THE EQUITY RISK PREMIUM (ERP), AS OF NOVEMBER 2023,
IS THE EXCESS OF
(1) THE ANN EXPECTED RETURN ON THE MKT FOR EQUITIES (ERonME),
OVER
(2) THE RISK-FREE RATE (RFR).
UNTIL FURTHER NOTICE, THE (1) ERonME IS PRESUMED TO BE 10%,
AND (2) THE RFR IS PRESUMED TO BE 4%.
CONSEQUENTLY, THE ERP IS 6%,
WHICH WILL BE USED IN THIS CAPM MODEL UNTIL
CHANGED BY THE AUTHOR.**

b) How Employed

This Step 2 Sub-Step 2A Sheet 3 of 3 explains that until further notice the Equity Risk Premium (ERP) for use in this CAPM is presumed to be 6%. It will be seen that if a Target has a Beta of 1, then the Discount rate produced by CAPM is the Risk Free Rate plus the ERP.

With this ERP aspect of the CAPM established, we now move to the complex topic of CAPM's Beta in Sub-Step 2B.

**D. Step 2, Sub-Step 2B, Application of the *Model*, for Use in
CAPM, Determine the Target's Beta, Chapter 8**

1. In General

As indicated, this Sub-Step 2B addresses the computation of a Target's Beta, which is a measure of the movements of the price of the Target's stock relative to movements in the equity market, such as the S&P 500. The Beta is an element in the Capital Asset Pricing Model (CAPM), which is addressed in chapter 9 and below in:

Sub-Step 2C, for Use in CAPM, Determine the All-Equity Discount Rate for the Target's FCFs and TV Computed in the First Step, by Bringing Together the Elements of CAPM.

³² The name of the Target will appear in this and other similar brackets.

Thus, the CAPM is used in determining the all equity Discount Rate (DR), which is used in determining the cost of equity portion of the Weighted Average Cost of Capital (WACC), which is the rate at which the Target's Free Cash Flows (FCFs) and Terminal Value (TV) are discounted to present value.

To emphasize: this section focuses on the computation of Beta, which clearly is the most complex element in the CAPM.

2. Yahoo! Finance's Estimate of IBM's Beta

While chapter 8 discusses, inter alia, the manner in which it is possible to compute the Beta of a publicly held firm, several professional sources compute Betas, and these sources may be utilized in an analysis. For example, on November 8, 2023, Yahoo! Finance computed IBM's Beta on a monthly basis for a 5-year period as 0.76.³³ So, on balance, over this period, if the stock market moved up by \$1.00, the price of IBM stock moved up by \$0.76, and if the stock market fell by 1%, the price of IBM stock only fell by \$0.76.

Rather than computing the Target's Betas, this Model uses Yahoo! Finance's estimate of the Target's Beta. The following is a Yahoo! Finance description of this Beta function:

Beta is simply a measure of the relative volatility of a stock. Beta is calculated in relation to a benchmark, such as the S&P 500 for U.S. stocks. A beta of 1.0 means that a stock has historically demonstrated volatility in line with its benchmark. A beta greater than 1.0 suggests the stock is more volatile than the benchmark, and a beta less than 1.0 suggests the stock is less volatile than the benchmark.

³³ Yahoo! Finance at <https://finance.yahoo.com/quote/IBM/>

For example, a U.S. stock with a beta of 1.5 has historically been 50 percent more volatile than the S&P 500. . . .

All the average investor needs to know about beta is that it is a measure of relative volatility with 1.0 as its baseline. . . .

A beta above 1.0 indicates more volatility than the overall market.³⁴

Another professional service could be used in estimating Beta, or the Beta could be computed pursuant to the principles discussed in chapter 8.

3. A Note on Levered and Unlevered Betas

This Beta Levering topic is addressed in relative detail in sections 8:7, 8:8, and 8:9 of *Chapter 8, DCF, Sub-Step 2B: Computation of CAPM's Beta for the Target, Including the Levering and Unlevering of the Beta*, and also in Appendix 14B. While it may be appropriate to use this Beta Levering process in determining the Target's Beta, this Model (1) does not compute the Target's Beta, and (2) relies on Yahoo! Finance for the determination of the Target's Beta. Consequently, the Beta Levering topic is not addressed further here.

4. The Actual Step 2, Sub-Step 2B, Excel Sheet 1 of 1: Determining the Target's Beta for Use in CAPM

a) The Model

The Beta of the Target is determined pursuant to the following Excel sheet:

³⁴ Wayne Duggan, *Alpha and Beta Explained* (November 16, 2016), available on Yahoo! Finance, at <https://finance.yahoo.com/news/alpha-beta-explained-164749864.html>

DCF VAL OF [TARGET's NAME] ³⁵:

STEP 2, SUB-STEP 2B, APPLICATION OF THE MODEL:

FOR USE IN CAPM:

EXCEL SHEET 1 OF 1:

FOR A PUBLICLY HELD TARGET,

DETERMINE THE TARGET'S "BETA"

FROM YAHOO! FINANCE, FOR USE IN THE CAPM;

USE AN ADDRESS SIMILAR TO THE FOLLOWING:

YAHOO! WEB ADDRESS FOR IBM:

<https://finance.yahoo.com/quote/IBM/>

b) How Employed

This Step 2 Sub-Step 2B Sheet 1 of 1 provides a short cut (i.e., Yahoo! Finance) for the determination of a public Target's Beta, one of the most difficult elements of the DCF valuation Model to compute.

With this Beta aspect of the CAPM established, we now move to the computation of the Equity Discount Rate (EDR), after a brief summary of "Where We Are,"

E. Where We Are After the Above [I] Step 2, Sub-Step 2A, Excel Sheets 1 of 3 (the RFR); Sheet 2 of 3 (the ERonME); Sheet 3 of 3 (the ERP); and [II] Sub-Step 2B (Beta)

To make sure the reader follows the logic of where we have come with Sub-Steps 2A and 2B, these two Sub-Steps have addressed each of the elements of the CAPM needed to produce the Equity Discount Rate (EDR), which can be written as follows.

$$\text{EDR} = \text{RFR} + \text{Beta} \times (\text{MRP} - \text{RFR}).$$

Thus, the RFR, Beta, ERonME are the elements used in CAPM to produce the EDR, which we turn to next.

³⁵ The name of the Target will appear in this and other similar brackets.

F. Step 2, Sub-Step 2C, Application of the Model, For CAPM, Determine the Equity Discount Rate (EDR), which is Used Below in Computing the Target's WACC which is used in Discounting the Target's FCFs and TV Computed in the *First Step*, by Bringing Together the Elements of CAPM, Chapter 9

1. Introduction to CAPM and the EDR

To reiterate, the CAPM, which is used in determining a Target's Equity Discount Rate (EDR), can be written as follows:

CAPM PRODUCES

EQUITY DISCOUNT RATE (EDR) =

RISK FREE RATE (RFR) + BETA X [EXPECTED RETURN ON THE MARKET (ERM) MINUS THE RFR, WHICH IS THE EQUITY RISK PREMIUM (ERP)] =

EDR = RFR + BETA X [ERM – RFR, OR ERP].

The EDR determined in this Sub-Step 2C through the use of CAPM is used together with the Cost of Debt and Cost of Preferred Stock, if any, in determining the Target's Weighted Average Cost of Capital (WACC) in Sub-Step 2E below.

2. The Actual Step 2, Sub-Step 2C,
Excel Sheet 1 of 1: The End Result of
CAPM: Determining the Target's
Equity Discount Rate (EDR), For Use
in Computing the WACC Below

a) The Model

In this Sub-Step 2C, the Target's Equity Discount Rate (EDR) is determined through the application of the CAPM Model. In Step 2, Sub-Step 2E below, this EDR is combined with the cost of debt and the cost of preferred stock, if any, in computing the Weighted Average Cost of Capital (WACC). Thus, this Sub-Step 2C is actually implemented in Step 2, Sub-Step 2E. The EDR is computed as follows:

[SEE NEXT PAGE]

DCF VAL OF [TARGET's NAME] ³⁶;
STEP 2, SUB-STEP 2C, SHEET 1 OF 1
APPLICATION OF THE MODEL:
FOR USE IN COMPUTING THE TARGET'S
EQUITY DISCOUNT RATE (EDR) WITH CAPM.
THE EDR IS USED IN COMPUTING IN SUB-STEP 2E SHEET 5 OF 5 THE:
TARGET'S WEIGHTED AVERAGE COST OF CAPITAL (WACC).
APPLY THE FOLLOWING CAPM FORMULA:
EDR = [RISK FREE RATE (RFR), WHICH IS 4% AS OF NOVEMBER 2023] +
BETA X [EXPECTED RETURN ON THE MARKET (ERM),
ASSUMED TO BE 10% AS OF NOVEMBER 2023] –
[THE RFR] =
EDR = RFR (4%) + BETA X [ERM (10%) – RFR] (4%)]
EDR = 4% + BETA X 6%.
THUS, BECAUSE RFR AND ERM ARE DETERMINED
BY MARKET PERFORMANCE,
THE PRINCIPAL TARGET SPECIFIC DETERMINANT
OF THE TARGET'S EDR IS THE TARGET'S BETA, WITH:
A BETA OF 1 RESULTING IN AN EDR = ERM;
A BETA < 1, RESULTING IN AN EDR OF < ERM;
A BETA > 1, RESULTING IN AN EDR OF > ERM
THE TARGET'S BETA IS DETERMINED ABOVE IN STEP 2, SUB-STEP 2B,
WHICH CONTAINS THE FOLLOWING
YAHOO! FINANCE WEB ADDRESS,
WITH THE TARGET SUBSTITUTED FOR IBM:
<https://finance.yahoo.com/quote/IBM/>

b) How Employed

This Step 2, Sub-Step 2C, Sheet 1 of 1 demonstrates that in this Model, a Target's Equity Discount Rate (EDR) is equal to 4% + [the Target's Beta] X [6%, that is, the Equity Risk Premium (ERP)]. This EDR is utilized in the computation of the Weighted Average Cost of Capital (WACC) in Sub-Step 2E, Sheet 3 of 5 below.

³⁶ The name of the Target will appear in this and other similar brackets.

G. Step 2, Sub-Step 2D, Application of the Model, Determine the Pre-Tax Cost (that is, the Required Return) on the Target's (1) Debt (COD), and (2) Preferred stock (COP), Chapter 10

1. Introduction

Chapter 10 addresses the methods of determining the Target's Cost of Debt (COD) and Cost of Preferred Stock (COP). Since interest on debt is generally deductible in computing Federal income tax, in determining the after-tax COD, it is necessary to take into account the tax savings resulting from the interest deduction. This adjustment is made in the computation of the Weighted Average Cost of Capital (WACC) in Sub-Step 2F. Thus, this Sub-Step 2D focuses on the gross interest payment on the corporation's debt and not the after-tax payment.

On the other hand, dividends on preferred stock are not deductible in computing a corporation's taxable income, and therefore, the cost of preferred to the firm is the same both pre-and post-income tax.

2. Introduction: Determining the Target's Pre-Tax Cost of Debt

This Sub-Step 2D, Sheet 1 of 2, determines the Target's pre-tax cost of debt, which is the effective interest rate on the debt, taking into account, inter alia:

- (1) any original issuance or other current discount from the stated principal amount;
- (2) the required interest payments and arrearages, if any; and
- (3) the "Table of Recent [1] Interest Coverage Ratios (ICRs), [2] Ratings, and [3] Interest Rate Spreads," which is set out below after this Step 2D.

3. The Actual Step 2, Sub-Step 2D,
Excel Sheet 1 of 2: For WACC;
Determine the Target's Pre-Tax Cost of
Debt, which Is Used in Sub-Step 2E,
Excel Sheet 1 of 5 to Determine the
After-Tax Cost of the Target's Debt

a) The Model

DCF VAL OF [TARGET'S NAME] ³⁷:

**STEP 2, SUB-STEP 2D, APPLICATION OF THE MODEL:
EXCEL SHEET 1 OF 2:
DETERMINE THE TARGET'S PRE-TAX COST OF DEBT
FIRST BY OBSERVING THE TARGET'S
CURRENTLY APPLICABLE MARKET INTEREST RATE, AND
SECOND, IF APPROPRIATE, BY REFERENCE TO THE
TARGET'S POSITION WITH MOODYS AND S&P DEBT
RATINGS ON THE "TABLE OF RECENT:
[1] INTEREST COVERAGE RATIOS (ICRs),
[2] RATINGS, AND
[3] INTEREST RATE SPREADS."
THE TABLE IS IN APPENDIX 14B AT:
SECTION (IV)(F)(2)(b)(1).**

*b) Table of Recent (1) Interest Coverage Ratios
(ICRs), (2) Ratings, and (3) Interest Rate Spreads,*

The Interest Coverage Ratio (ICR) generally is equal to (1) a company's earnings before interest and taxes (EBIT), divided by (2) the company's interest expense, both during a given period, such as a fiscal year. Ratings of a company's ability to service debt are provided by, inter alia, Moody's and S&P. The Interest Rate Spread is (1) a company's actual interest rate, minus (2) the Risk Free Rate. The following table provides information on these three aspects relating to the evaluation of a company's debt.

³⁷ The name of the Target will appear in this and other similar brackets.

**,TABLE IV.G (3)b): TABLE OF RECENT: [1] INTEREST COVERAGE RATIOS (ICRs)
(FROM LOW IN COLUMN [1] TO HIGH IN COLUMN [2]);
[2] RATINGS (COLUMN [3]); AND [3] INTEREST RATE SPREADS OVER THE RISK-
FREE RATE (COLUMN [4])**

| COLUMN [1] > Low ICR | COLUMN [2] ≤ to High ICR | COLUMN [3] The Rating is: Moodys/S&P | COLUMN [4] Interest Rate Spread Over the Risk Free Rate |
|--|---|---|--|
| -100000 | 0.199999 | D2/D | 20.00% |
| 0.2 | 0.649999 | C2/C | 17.50% |
| 0.65 | 0.799999 | Ca2/CC | 15.78% |
| 0.8 | 1.249999 | Caa/CCC | 11.57% |
| 1.25 | 1.499999 | B3/B- | 7.37% |
| 1.5 | (3)(1.749999 | B2/B | 5.26% |
| 1.75 | 1.999999 | B1/B+ | 4.55% |
| 2 | 2.2499999 | Ba2/BB | 3.13% |
| 2.25 | 2.49999 | Ba1/BB+ | 2.42% |
| 2.5 | 2.999999 | Baa2/BBB | 2.00% |
| 3 | 4.249999 | A3/A- | 1.62% |
| 4.25 | 5.499999 | A2/A | 1.42% |
| 5.5 | 6.499999 | A1/A+ | 1.23% |
| 6.5 | 8.499999 | Aa2/AA | 0.85% |
| 8.50 | 100000 | Aaa/AAA | 0.69% |

Thus, for example, this table shows that if the ICR of a firm is 1, which is between 0.8 and 1.2, then: (1) Moody's rating is Caa and S&P rating is CCC, and (2) the expected rate over the Risk-Free Rate is 11.57%.

On the other hand, the table shows that if the ICR of a firm is 9, which is between 8.5 and 10000, then: (1) the Moody's rating is Aaa, (2) and the S&P rating is AAA, and (2) the expected rate over the Risk-Free Rate is only 0.69%.

In the case of the use of this Model in Appendix 14A in valuing Dell, the ICR will be determined on the basis of the above table which, as indicated, is dated as of February 2024.

c) How Employed

This Step 2 Sub-Step 2D Sheet 1 of 2 determines the Target's pre-tax cost of debt, which is the actual interest rate on the Target's debt. demonstrates that in this Model a Target's Equity Discount Rate (EDR) is equal to $4\% + [\text{the Stock's Beta}] \times [6\%, \text{ that is, the Equity Risk Premium (ERP)}]$.

4. The Actual Step 2, Sub-Step 2D, Excel Sheet 2 of 2: For WACC, Ascertain the Target's Pre-Tax Cost of Preferred Stock, if any, which Is Also the After-Tax Cost

a) The Model

This Sub-Step 2D, Sheet 2 of 2, determines the Target's pre-tax, which is also the after-tax, cost of preferred stock. This determination is made by consideration of all of the provisions of the preferred stock, including, inter alia, (1) the contractual terms and conditions, (2) any accrued but unpaid dividends, and (2) the current trading price. The following is Sub-Step 2D, Sheet 2 of 2:

DCF VAL OF [TARGET's NAME] ³⁸:

STEP 2, SUB-STEP 2D, APPLICATION OF THE MODEL:

EXCEL SHEET 2 OF 2:

**DETERMINE THE TARGET's COST OF PREFERRED STOCK, IF ANY,
BY REFERENCE, INTER ALIA, TO:**

[1] THE CONTRACTUAL PROVISIONS OF THE STOCK;

[2] ANY ACCRUED BUT UNPAID DIVIDENDS;

[3] THE CURRENT TRADING PRICE, IF ANY;

AND

[4] ANY RATINGS OF THE PREFERRED STOCK

b) How Employed

This Step 2 Sub-Step 2D Sheet 2 of 2 determines the Target's cost of preferred stock. Most firms do not have preferred stock outstanding. For example, none of the Targets in the Big Six Valuation Cases, see chapter 1, had preferred stock outstanding. Also, the Target that is subject to the valuation in Appendix 14A, that is, Dell, also one of the six, does not have preferred stock outstanding. Furthermore, preferred stock can present significant fact specific issues. For these and other reasons, preferred stock is not examined further here.

**H. Step 2, Sub-Step 2E, Application of the Model, Determine
the Discount Rate through the WACC, which Takes into Account the
Cost of the Target's Debt, Preferred stock, and Common stock,
Chapter 11**

1. Background

Section 11:3 of the book sets out the formula for computing the Weighted Average Cost of Capital (WACC) for a Target that has only debt and common stock outstanding, which is the focus here. As indicated in section 11:4, similar principles apply if the Target has outstanding

³⁸ The name of the Target will appear in this and other similar brackets.

preferred stock; but this section does not address situations in which a Target has preferred stock outstanding.

2. The Basic WACC Formula for a
Target with Debt, (**BUT
GENERALLY NOT PREFERRED
STOCK**) Outstanding

[NOTE: THE GENERAL ASSUMPTION IN THE DISCUSSIONS OF WACC IN THIS APPENDIX 14B IS THAT THE TARGET HAS NO PREFERRED STOCK OUTSTANDING. IF THE TARGET HAS PREFERRED STOCK OUTSTANDING, SIMILAR PRINCIPLES TO THOSE DISCUSSED HERE WITH COMMON STOCK AND DEBT WOULD APPLY WITH RESPECT TO THE PREFERRED STOCK. IN CERTAIN CASES, THE FOLLOWING DISCUSSION DOES ADDRESS PREFERRED STOCK.]

As indicated, in using the DCF Model, a Target's Free Cash Flows (FCFs) and Terminal Value (TV) are discounted to Present Value (PV) at the Target's WACC, which is computed by summing:

- (1) *WACC Element 1, Cost of the Target's Debt: The After-Tax Cost of the Target's Debt, multiplied by the Percentage of the Value of the Target Represented by Debt, and*
- (2) *WACC Element 2, Cost of the Target's Common Stock: The Expected Return on Common Equity, multiplied by the Percentage of the Value of the Firm Represented by Common Equity.*

The reason for using the *After-Tax Cost of Debt* is because interest on debt is generally tax deductible in computing the Target's taxable income, and the tax savings generated by the tax deduction for the payment of interest reduces the cost of debt. This concept is explored in greater depth in the next section.

Note that pursuant to *WACC Element 1, Cost of the Target's Debt*, the *After-Tax Cost of Debt* is included in the WACC only to the extent of the percentage, measured by value, that Debt is in the capital structure of the Target. Correlatively, pursuant to *WACC Element 2, Cost of the Target's Common Stock*, the *Expected Return on Common Equity* is included in the WACC only to the extent of the percentage, measured by value, that Common stock is in the capital structure of the Target. Thus, in using the WACC formula, it is necessary to determine how much of the value of the firm is attributable to (1) the value of the firm's debt, and (2) the value of the firm's common stock.

[NEXT PAGE]

3. The Actual Step 2, Sub-Step 2E, Excel Sheet 1 of 5: For WACC: Determine the After-Tax Cost of the Target's Debt (See above for the Pre-Tax Cost of Debt)

a) The Model

This Step 2, Sub-Step 2E, Sheet 1 of 5 computes the After-Tax Cost of Debt for Use in WACC, assuming that the Target is profitable and is principally active in the U.S. with a combined Federal, state and local after-tax rate of 25%. This step provides:

DCF VAL OF [TARGET's NAME] ³⁹:

STEP 2, SUB-STEP 2E, APPLICATION OF THE MODEL:

EXCEL SHEET 1 OF 5:

FOR USE IN COMPUTING THE WACC:

DETERMINE THE AFTER-TAX COST OF DEBT BY:

ASSUMING THAT THE TARGET's EFFECTIVE COMBINED FEDERAL, STATE, AND LOCAL TAX RATE IS:

25%. IN SUCH CASE,

THE TARGET's AFTER-TAX COST OF INTEREST ON ITS DEBT IS .75,

MEANING THAT FOR EACH DOLLAR OF INTEREST PAID,

THE COST IS ONLY 75 CENTS BECAUSE

TAXES GO DOWN BY 25 CENTS.

THE FORMULA LEADING TO THIS RESULT IS AS FOLLOWS:

[THE EFFECTIVE-AFTER-TAX-COST

OF AN INTEREST [I] PAYMENT (EA-TCofIP)] =

[I] X [1- T, THE TAX RATE OF 25%] =

[EA-TCofIP] = [I] X [1- .25]

[EA-TCofIP] = .75I, OR 75% OF THE ACTUAL [I] PAYMENT

b) How Employed

This Step 2, Sub-Step 2E, Sheet 1 of 5 provides information on the tax rate that is applicable to the Target. As indicated, the assumption is that the Target is a tax paying corporation, whose combined federal, state, and local rate of taxes is 25%.

³⁹ The name of the Target will appear in this and other similar brackets.

4. The Actual Step 2, Sub-Step 2E,
Excel Sheet 2 of 5: For WACC:
Determine the Percentage of the
Aggregate Fair Market Value of the
Target's Capital that Is Represented by
Debt

a) The Model

This Sheet 2 of 5 of Sub-Step 2E focuses on the percentage of the Target's overall fair market value represented by debt. While this step will also give the percentage of the Target's overall fair market value represented by common equity, that percentage is utilized below in connection with the determination of the cost of the Target's common stock.

This Sub-Step is done on a fair market value basis, with the sum of the value of the Target's debt and equity being the estimated total value of the assets side of the Target's balance sheet.

The assumption here is that all of the common stock is listed on an exchange. If this is not the case, appropriate adjustments would have to be made. Also, adjustments would have to be made if the Target has preferred stock outstanding.

As a general matter, non-traded debt is valued at its stated amount on the Target's balance sheet, which generally will be the initial principal amount.

This step is implemented as follows:

[NEXT PAGE]

DCF VAL OF [TARGET's NAME] ⁴⁰:

STEP 2, SUB-STEP 2E, APPLICATION OF THE MODEL:

EXCEL SHEET 2 OF 5:

FOR USE IN COMPUTING THE WACC:

DETERMINE THE PERCENTAGE OF:

**THE AGGREGATE FAIR MARKET VALUE OF THE TARGET'S CAPITAL,
THAT IS REPRESENTED BY DEBT.**

**FOR EXAMPLE, ASSUME THAT A TARGET HAS:
COMMON STOCK, ITS ONLY CLASS OF STOCK,**

WITH A VALUE OF \$60M, AND

DEBT WITH A VALUE OF \$40M, THEN

THIS PERCENTAGE IS 40%

b) How Employed

The table at the bottom of Excel Sheet 2 of 5 of this Step 2, Sub-Step 2E, contains a computation of both [1] the FMV of, and [2] the relative percentages of, the Target's outstanding debt, preferred stock, and common stock. Thus, the Table does not just compute the percentage of the aggregate FMV of the debt as called for by this Sub-Step, it also computes the percentages of the aggregate FMV of (1) the preferred stock, if any, and (2) the common stock. These relative percentages are utilized in the Excel Sheet 5 of 5 of Step 2, Sub-Step 2E in computing the actual WACC.

**5. The Actual Step 2, Sub-Step 2E,
Excel Sheet 3 of 5: For WACC;
Identify the Previously Determined
Equity Discount Rate (EDR) of the
Target (Assuming No Preferred
Outstanding)**

a) The Model

The Target's Equity Discount Rate (EDR) was determined above in Step 2, Sub-Step 2C Excel Sheet 1 of 1, and this rate is used below as an element in the computation of the Target's Weighted Average Cost of Capital. (WACC).

⁴⁰ The name of the Target will appear in this and other similar brackets.

b) How Employed

The assumption for this computation is that the Target does not have any preferred stock outstanding. If preferred stock were outstanding, certain adjustments, not discussed here, would apply in determining the Target's EDR.

As discussed above, the EDR is equal to $4\% + [\text{the Target's Beta}] \times [6\%, \text{ that is, the Equity Risk Premium (ERP)}]$.

6. The Actual Step 2, Sub-Step 2E,
Excel Sheet 4 of 5: For WACC;
Determine the Percentage of the
Aggregate Fair Market Value of the
Target Represented by Common Stock

a) The Model

This Sub-Step 2E, Sheet 4 of 5 focuses on the percentage of the Target's overall fair market value represented by common stock. While as seen above, this step will also give the percentage of the Target's overall fair market value represented by debt, that percentage is utilized above in connection with the determination of the cost of the Target's debt.

As indicated above in the determination of the Percentage of the Aggregate Fair Market Value of the Target Represented by Debt:

- This Sub-Step is done on a fair market value basis, with the sum of the value of the Target's debt and equity being the estimated total value of the assets side of the Target's balance sheet.
- The assumption here is that all of the common stock is listed on an exchange.
- As a general matter, non-traded debt is valued at its stated amount on the Target's balance sheet, which generally will be the initial principal amount.

This step is implemented as follows:

DCF VAL OF [TARGET's NAME] ⁴¹:

STEP 2, SUB-STEP 2E, APPLICATION OF THE MODEL:

SHEET 4 OF 5:

FOR USE IN COMPUTING THE WACC:

DETERMINE THE PERCENTAGE OF THE AGGREGATE FAIR MARKET VALUE OF THE TARGET'S CAPITAL REPRESENTED BY COMMON STOCK. THUS, IF A TARGET HAS ONLY COMMON STOCK OUTSTANDING, WITH A VALUE OF \$60M, AND DEBT WITH A VALUE OF \$40M, THEN THIS PERCENTAGE IS 60%

b) How Employed

While this step focuses on the “Target’s Capital Represented by Common Stock,” the Table at the bottom of Step 2, Sub-Step 2E, Sheet 2 of 5, shows the percentage breakdowns of the Target’s outstanding: (1) debt, (2) preferred stock, and (3) common stock. Thus, that Table provides the information required by this Step 2, Sub-Step 2E, Sheet 4 of 5.

7. The Actual Step 2, Sub-Step 2E, Excel Sheet 5 of 5: For WACC: Bringing the Elements of Together: The WACC Table: Computing the WACC by Proportionate Costs of Debt, Preferred Stock (if any), and Common Stock

a) The Model

This Step 2, Sub-Step 2E, Sheet 5 of 5, i.e., “The WACC Table,” brings together the above concepts for use in computing the Target’s WACC. The key inputs in this WACC table are:

- [1] Pre-Tax Cost of Debt;
- [2] After-Tax Cost of Debt;
- [3] Pre- and After-Tax Cost of Common;
- [4] Pre- and After-Tax Cost of Preferred; and
- [5] Percentages of Each Form of Capital: Common, Preferred and Debt.

The WACC table is as follows:

⁴¹ The name of the Target will appear in this and other similar brackets.

[NEXT PAGE]

**STEP 2, SUB-STEP 2E, APPLICATION OF THE MODEL:
EXCEL SHEET 5 OF 5: FOR USE IN COMPUTING THE WACC:
THE WACC TABLE: COMPUTING THE WACC BY PROPORTIONATE COSTS OF
DEBT, PREFERRED STOCK (IF ANY), AND COMMON STOCK**

| | [1] Pre-Tax Cost of Each Component of Capital, Stated as a Percentage | [2] Percentage of Forms of Capital in the Capital Structure: I.E., Weights of Each Form⁴² | [3] After-Tax Cost of Each Form of Capital, with a Tax Rate of 25% | [4] The Weighted Cost of Each Component of Capital [2] × [3] | [5] The Weighted Average Cost of Capital |
|--|--|---|---|---|---|
| [A] Debt | Pre-Tax Cost of Debt ⁴³ ____% | ____% | ____% [= Pre-Tax Cost of Debt, Col. 1 ____% × (1 - .25) = [____% × .75] = [Post-Tax Cost of Debt] | ____% | NA |
| [B] Common Stock | Pre-Tax Cost of Common Stock ⁴⁴ ____% | ____% | ____% Same as Pre-Tax Cost of Common, Col. 1 | ____% | NA |
| [C] Preferred Stock | Pre-Tax Cost of Preferred Stock ⁴⁵ ____% | ____%: | ____% Same as Pre-Tax Cost of Preferred, Col. 1 | ____% | NA |
| [D] Weighted Average Cost of Capital = [4A] + [4B] + [4C] | NA | NA | NA | NA | ____% [4A] + [4B] + [4C] |

⁴² Determined by the FMV of each element of the Capital: Common, Preferred, or Debt.

⁴³ Step 2, Sub-Step 2D, Excel Sheet 1 of 2, Pre-Tax Cost of Debt.

⁴⁴ Step 2, Sub-Step 2C, Sheet 1 of 1, The Target's Equity Discount Rate (EDR) computed with CAPM.

⁴⁵ Step 2, Sub-Step 2D, Sheet 2 of 2, Cost of Preferred Stock.

b) The Application of the above WACC Table is illustrated in the Following Hypothetical Situation

The application of the WACC Table is illustrated by the following hypothetical. The

Basic Facts are as follows: Acquiring corporation (AC) has:

[1] A pre-tax Cost of Debt (r^d) of 10%;

[2] An after-tax Cost of Debt that is equal to its Pre-Tax Cost of Debt (r^d) of 10% multiplied by [1- the Corporate Tax Rate of 25%], that is: [$r^d (1 - .25)$ or $.10 \times .75$], which is an after-tax cost of debt of 7.5%;

[3] A Cost of Common Stock using CAPM of 15%; and

[4] No Preferred Stock outstanding.

In addition, the Target Corporation (TC) is in the same line of business as AC and has no outstanding debt.

AC plans to finance its acquisition of TC by using AC's historic debt to equity ratio, which is 30% debt and 70% equity.

Given these elements, AC's WACC is 13.12%, computed as follows pursuant to the above "WACC Table," which brings together the above concepts:

HYPO ILLUSTRATION OF: STEP 2, SUB-STEP 2E, EXCEL SHEET 5 OF 5: THE WACC TABLE: HYPO FACTS: [1] Pre-Tax Cost of Debt (PTCD) = 10%; [2] After-Tax Cost of Debt (ATCD) = 7.5%; [3] Cost of Common (CofC) = 15%; [4] Cost of Preferred (CofP) = 0; and [5] Percentages of Capital: Common (P-C) = 75%, Debt (P-D) = 25%

| | [1] Pre-Tax Cost of Each Component of Capital, Stated as a Percentage | [2] Percentage of Total FMV of Each Form of Capital, I.E., Weights of Each Form | [3] After-Tax Cost of Each Form of Capital, with a Tax Rate of 25% | [4] The Weighted Cost of Each Component of Capital [2] × [3] | [5] The Weighted Average Cost of Capital [WACC] [4A] + [4[B] + [4C] |
|---------------------------------------|--|--|---|---|--|
| [A] Debt | Pre-Tax Cost of Debt 10% | 25% | 7.5% = [Pre-Tax Cost of Debt, Col. 1: 10%] × [1 – .25] = [10% × .75] = [7.5% After-Tax Cost of Debt] | [25%] X [7.5%] = 1.87% | NA |
| [B] Common Stock | Pre-Tax Cost of Common Stock, Using CAPM 15% | 75% | 15% Same as Pre-Tax Cost of Common, Col. 1 | 11.25% | NA |
| [C] Preferred Stock | Pre-Tax Cost of Preferred Stock 0%, No Preferred Stock | 0%: | 0% Same as Pre-Tax Cost of Preferred, Col. 1 | 0% | NA |
| [D] WACC = [4A] + [4[B] + [4C] | NA | NA | NA | NA | 13,12% [1.87%, 4A] + [11.25%, 4B] + [0.0%, 4C] |

c) How Employed

This Step 2, Sub-Step 2E, Excel Sheet 5 of 5, which addresses the computation of the Weighted Average Cost of Capital (WACC) is both (1) illustrated with an Excel sheet based on the Hypothetical acquisition discussed above, and (2) available in a separate generic form Excel sheet. The Hypothetical acquisition form is entitled:

DCF VALUATION OF ["HYPO TARGET"]:* EXCEL SHEET: STEP 2, SUB-STEP
2E, SHEET 5 OF 5: ACQUIRER's WACC TABLE: HYPO ILLUSTRATION 1 OF 1;
SEE ALSO TABLE FOR "ACTUAL TARGET," 1 OF 1

And, the generic form, which can be used in the valuation of any Target, is set out in the following Excel spreadsheet:

DCF VALUATION OF ["TARGET's NAME"]:* EXCEL SHEET: STEP 2, SUB-STEP
2E, SHEET 5 OF 5: ACQUIRER's WACC TABLE FOR A "REAL TARGET" SEE
ASLO TABLE FOR "HYPO TARGET"

I. Summarizing the Second Step and a List of Its Spreadsheets

As indicated, the *Second Step* is all about the steps employed in computing the Target's Weighted Average Cost of Capital (WACC), which is the proportionate cost of a Target's common stock and debt, and, if any, preferred stock. As addressed in later steps, the Target's Free Cash Flows (FCFs) and Terminal Value (TV) are discounted to Present Value at the WACC.

Now, on to the *Third Step*, which involves determining the present value of the FCFs and TV, both of which are determined in the *First Step*.

V. *THIRD STEP: DISCOUNTING TO PRESENT VALUE THE TARGET'S FCFs AND TV AT THE WACC*

A. In General, Application of the Model

In this *Third Step*, the DCF formula is used to discount the Target's Free Cash Flows (FCFs) and Terminal Value (TV), determined in the *First Step*, to Present Value (PV) at the Weighted Average Cost of Capital (WACC). As discussed above, the WACC is computed in the *Second Step* above. with its five Excel sheets, which lead to the following computation of WACC in Sheet 5 of 5 of the *Second Step*:

STEP 2, SUB-STEP 2E, APPLICATION OF THE MODEL:

EXCEL SHEET 5 OF 5: FOR USE IN COMPUTING THE WACC:

THE WACC TABLE:

Thus, in applying this *Third Step*, the WACC computed in the *Second Step* is utilized as the Discount Rate that is applicable to the Target's FCFs and TV, which are determined in the *First Step*.

B. Introduction To Annex D (which is also Set Out Below in this Section V.B): Discount Factor Table, for Use in Determining the Appropriate Discount Rate for Bringing to Present Value the Target's Free Cash Flows (FCFs) and Terminal Value (TV)

In many cases, in conducting a DCF analysis, the analyst will use a Discount Factor Table to determine the appropriate discount rate to be used in discounting to present value (PV) the Target's FCFs and Terminal Value determined in the First Step. A Discount Factor Table is set out immediately below and, for ease of reference, is also set out in Annex D. The title of the Table is:

TABLE SECTION V.B: DISCOUNT FACTOR TABLE: DISPLAYING DISCOUNT FACTORS FOR [1] A SPECIFIC FUTURE YEAR FROM 1 TO 6 ON THE VERTICAL AXIS; AND [2] A SPECIFIC RATE OF RETURN FROM 8% TO 16% ON THE HORIZONTAL AXIS.

Turning to the Discount Factor Table below and in Annex D, these tables demonstrate, for example, how much a \$1 or other amount received at a future date (e.g., from 1 year later to 6 years later) is worth today (that is, the Present Value of the \$1) assuming an implied interest (or discount) rate running from 8% to 16%.

The number of years (1 to 6) on the vertical axis is chosen because that is the number of years in the Horizon Period (1 to 5 years) with the Terminal Year (year 6) in this Model, and the discount rates (from 8% to 16%) are chosen because those rates of return are fairly representative of the range of rates of return in most investments as of January 2024.

To illustrate the Table, the present value of a \$1 to be received in five years at a 10% rate of interest is just 0.621 or 62% or 62 cents. This means that if an investor is going to receive \$1 in 5 years and the required rate of return on the investment is 10%, then the investor would be willing to pay today 62 cents for the right to receive the \$1 in five years.

TABLE SECTION V.B: DISCOUNT FACTOR TABLE: DISPLAYING DISCOUNT FACTORS FOR [1] A SPECIFIC FUTURE YEAR FROM 1 TO 6 ON THE VERTICAL AXIS; AND [2] A SPECIFIC RATE OF RETURN FROM 8% TO 16% ON THE HORIZONTAL AXIS

[NOTE THAT [1] THE HIGHEST DISCOUNT RATE (AND THE LOWEST ABSOLUTE DISCOUNT) IS 93%, WHICH IS IN THE TOP LEFT BOX FOR YEAR NO. 1, WITH AN 8% INTEREST RATE; AND [2] THE LOWEST DISCOUNT RATE (AND THE HIGHEST ABSOLUTE DISCOUNT) IS 41%, WHICH IS THE BOTTOM RIGHT BOX FOR YEAR NO. 6, WITH A 16% INTEREST RATE.]

| YR FCF AND TV RECEIVED /REQUIRED RATE OF RETURN (DISCOUNT RATE) | 8% | 9% | 10% | 11% | 12% | 13% | 14% | 15% | 16% |
|--|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|
| 1 YR | 0.926 | 0.917 | 0.909 | 0.901 | 0.893 | 0.885 | 0.877 | 0.870 | 0.862 |
| 2 YR | 0.857 | 0.842 | 0.826 | 0.812 | 0.797 | 0.783 | 0.769 | 0.756 | 0.743 |
| 3 YR | 0.794 | 0.772 | 0.751 | 0.731 | 0.712 | 0.693 | 0.675 | 0.658 | 0.641 |
| 4 YR | 0.735 | 0.708 | 0.683 | 0.659 | 0.636 | 0.613 | 0.592 | 0.572 | 0.552 |
| 5 YR | 0.681 | 0.650 | 0.621 | 0.593 | 0.567 | 0.543 | 0.519 | 0.497 | 0.476 |
| 6 YR | 0.630 | 0.596 | 0.564 | 0.535 | 0.507 | 0.480 | 0.456 | 0.432 | 0.410 |

C. The Basic Hypothetical Facts for Illustrating (1) Both of the Excel Long-Form Third Step DCF Models, and (2) the One Excel Short-Cut Steps 3-5 DCF Model

The discussion here is designed to illustrate (1) both of the *Excel Long-Form Third Step DCF Models*, and (2) the one *Excel Short-Cut Steps 3-5 DCF Model*. As discussed above, the following are the two Long-Form Models:

(1) the *Excel Long Form Third Step DCF Formula Approach*, discussed in section V.D,

and

(2) the *Excel Long Form Third Step DCF Tabular Approach*.

Assume that the following are the Basic Facts relating to a DCF valuation done by Big Acquirer of Little Target, which Big Acquirer is considering acquiring:

[NEXT PAGE]

TABLE V.C: BASIC FACTS RE “BIG-ACQUIRER’s” DCF VALUATION OF “LITTLE-TARGET,” WHICH BIG-ACQUIRER IS CONSIDERING ACQUIRING

| ITEMs RELATED TO DCF VALUATION OF “LITTLE-TARGET” | BASIC DATA | DCF, DISCOUNT FACTORS FOR PARTICULAR FCF AND TV ASSUMING A WEIGHTED AVERAGE COST OF CAPITAL (WACC) OF 12% [SEE TABLE ABOVE] |
|---|-------------------|--|
| 1. INTEREST (DISCOUNT) RATE; THE COST OF CAPITAL APPROPRIATE FOR LITTLE TARGET | 10% OR 0.10 | NA |
| 2. PROJECTED INITIAL COST OF ACQUIRING LITTLE TARGET AT BEGINNING OF YEAR 1 | \$100M | NA |
| 3. PROJECTED FREE CASH FLOW (FCF) FROM LITTLE TARGET AT THE END OF YEAR 1 | \$5M | .89 |
| 4. PROJECTED FCF FROM LITTLE TARGET AT THE END OF YEAR 2 | \$10M | .79 |
| 5. PROJECTED FCF FROM LITTLE TARGET AT THE END OF YEAR 3 | \$15M | .71 |
| 6. PROJECTED FCF FROM LITTLE TARGET AT THE END OF YEAR 4 | \$20M | .63 |
| 7. PROJECTED FCF FROM LITTLE TARGET AT THE END OF YEAR 5 | \$25M | .56 |
| 8. PROJECTED TERMINAL VALUE (TV) OF LITTLE TARGET AT THE END OF YEAR 6 | \$250M | .50 |
| 9. TARGET’S LIABILITIES: TO BE DEDUCTED FROM PV VALUATION OF THE ASSET SIDE OF TC’S ECONOMIC BALANCE SHEET, WHICH | \$50M | NA |

| | | |
|--|--|--|
| INCLUDES ALL ASSETS, WHETHER OR NOT ON THE FINANCIL BALANCE SHEET | | |
|--|--|--|

D. Background on the Third Step

1. The Model

This *Third Step* provides for the discounting of the Free Cash Flows (FCFs), determined in chapter 5, and the Terminal Value (TV), determined in chapter 6 (both in *Step 1*), at the WACC discount rate, determined in chapter 11, which is part of *Step 2*. Chapters 7 through 10, also in *Step 2*, are the building blocks for determining the WACC in chapter 11.

2. The Three Connected Long-Form Steps 3, 4, and 5

The *Third Step* (discounting the FCFs and TV at the WACC), *Fourth Step* (summing the FCFs and TV), and *Fifth Step* (computing NPV by subtracting the Target's liabilities) are referred to jointly here as the "*Three Connected Long-Form Steps*," because they separate the relevant *Connected* functions into three distinct *Steps*.

These *Three Connected Long-Form Steps* (i.e., the *Third*, *Fourth* and *Fifth Steps*) can be addressed in one *Step*, which is referred to here as the "*Optional Short Form Approach to Steps Three, Four, and Five in Computing the Net FMV of the Target's Operating Assets*." This *Optional Short Form Approach* is addressed below in section VIII, after the discussion of the *Long Form* approaches to each of *Steps 3, 4, and 5*. If the reader is familiar with the functions covered in *Steps 3, 4, and 5*, then the reader may consider employing this *Optional Short Form Approach*, however, this author's recommendation is that the analyst follow the distinct *Third*, *Fourth* and *Fifth Steps*.

3. The Two Forms of the Third Step: The Formular Approach and the Tabular Approach

This discussion presents two forms of this *Third Step*. As will be seen, *Step 3* has a *Formular Approach*, and a *Tabular Approach*, both discussed below. However, only the *Tabular Approach*, which has a more succinct presentation form, is used in implementing this *Third Step* and, therefore, has an Excel Sheet implementing it.

4. Basic Principles of the Two Forms of the Long Form *Third Step*

To illustrate the basic principles, the discussion here presents two approaches to the *Long Form Third Step*. These two approaches are referred to here as:

- (1) the *Long Form Third Step DCF Formula Approach*, see section V.D.5, and
- (2) the *Long Form Third Step DCF Tabular Approach*, see section V.D.6.

These two Models are sometimes referred to as the *Two Long Form Third Step DCF Models*.

Because it is easier to work with, only the *Long Form Third Step DCF Tabular Approach* has an accompanying Excel Sheet. However, because it may be easier to comprehend the Formula Approach, the discussion below starts with that approach.

E. The Long Form Third Step DCF Formula Approach

1. Introduction to the Formula Approach

The *Long Form Third Step DCF Formula Approach* discussed in this section could be implemented by a generic form Excel spreadsheet, but in this Appendix, only the Word version of the of this *Step* is presented. However, as indicated, an attached Excel sheet is provided below for the alternative approach to this Step, that is, the *Long Form Third Step DCF Tabular Approach*.

After the presentation of the *Illustrative Long Form Formula Approach*, with its Four Rows, the discussion illustrates the application of this Approach in a hypothetical situation. However, it must be emphasized that this Illustrative Long Form Formular Approach is not employed in the Model, which adopts the Tabular Approach discussed below. However, an understanding of the Formula Approach can facilitate an understanding of the Tabular Approach.

The following is an illustrative Long Form Formula Approach:

DCF VAL OF [TARGET's NAME] ⁴⁶:

ILLUSTRATIVE LONG FORM⁴⁷ FORMULA APPROACH TO STEP 3, APPLICATION OF THE MODEL:

EXCEL SHEET 1 OF 1

COMPUTING PRESENT VALUES:

OF THE TARGET's

FREE CASH FLOWS (FCFs) AND TERMINAL VALUE (TV).

PURSUANT TO THE FORMULAS IN ROWS 1-4 BELOW,

WHICH TOGETHER WITH STEPS 4 AND 5

ARE REFERRED TO HERE

AS "THE EXCEL LONG FORM,"

COMPUTE THE VALUE OF THE TARGET BY

DISCOUNTING (BY THE DISCOUNT FACTORS SPECIFIED BELOW),

THE FOLLOWING:

(1) THE FCFs FOR THE YEAR 1 TO YEAR 5 PROJECTION PERIOD; AND

(2) THE YEAR 6 TV (BOTH DETERMINED IN STEP 1).

THE DISCOUNT FACTORS (DFs) (E.G., $\frac{1}{(1+r)^1}$),

SHALL BE BASED ON A DISCOUNT RATE (r),

DETERMINED BY WACC IN STEP 2,

THE FOLLOWING ARE THE REQUIRED COMPUTATIONS IN ROWs 1 TO 4:

ROW 1, THE DCF LONG FORM MODEL:

$$PV = \frac{1}{(1+r)^1} [FCF YR 1] + \frac{1}{(1+r)^2} [FCF YR 2] + \frac{1}{(1+r)^3} [FCF YR 3] +$$

⁴⁶ The name of the Target will appear in this and other similar brackets.

⁴⁷ As indicated in the text, the Long Form, Steps 3, 4, and 5, are presented separately. Section VIII sets out an "Optional Short Form Approach to Steps 3, 4, and 5 in Computing the Net FMV of the Target's Operating Assets."

$$\frac{1}{(1+r)^4} [FCF YR 4] + \frac{1}{(1+r)^5} [FCF YR 5] + \frac{1}{(1+r)^6} [TV YR 6]$$

[PV EQUALS] _____

ROW 2, THE DCF LONG FORM MODEL IN THE FORM OF (1) THE DISCOUNT FACTORS (DFs, E.G., $\frac{1}{(1+r)^1}$), CONVERTED INTO A SINGLE DISCOUNT NUMBER PURSUANT TO THE ABOVE DISCOUNT FACTOR TABLE, AND (2) THE (A) FCFs, AND (B) TV AS SHOWN IN ROW 1:

$$PV = [DF YR 1]X[FCF YR 1] + [DF YR 2]X[FCF YR 2] + [DF YR 3]X[FCF YR 3] + [DF YR 4]X[FCF YR 4] + [DF YR 1]X[FCF YR 5] + [DF YR 6]X[TV YR 6]$$

[PV EQUALS] _____

ROW 3, THE DCF LONG FORM MODEL, FOR EACH YEAR, INSERT INTO (1) THE FIRST BRACKET, THE APPLICABLE DISCOUNT FACTOR (DF), FROM THE “DISCOUNT FACTOR TABLE;” AND (2) THE SECOND BRACKET, THE APPLICABLE (A) FCFs FROM EXCEL SHEET, STEP 1, SUB-STEP 1B, SHEET 1 OF 1; OR (B) THE TV FROM STEP 1, SUB-STEP 1C, SHEET 1 OF 1:

$$PV = [\quad]X[\quad]YR1 + [\quad]X[\quad]YR2 + [\quad]X[\quad]YR3 + [\quad]X[\quad]YR4 + [\quad]X[\quad]YR5 + [[\quad]X[\quad]YR6TYr$$

[PV EQUALS] _____

ROW 4, THE DCF LONG FORM MODEL, FILL IN FOR EACH YEAR THE PRESENT VALUES OF EACH OF THE FCFs AND TV:

$$PV = \$ \text{_____} YR1 + \$ \text{_____} YR2 + \$ \text{_____} YR3 + \$ \text{_____} YR4 + \$ \text{_____} YR5 \\ + \$ \text{_____} YR6$$

[PV EQUALS] [NOTE, THE TOTAL AMOUNT IS PRESENTED IN STEP 4 OF THE LONG FORM MODEL]

2. Illustration of the Application of the Long Form Third Step DCF Formula Approach

a) Introduction

This section illustrates the application of this Formula Approach in the factual situation discussed above in section V.C, which is set out in TABLE V.C: BASIC HYPOTHETICAL FACTS RE “BIG-ACQUIRER’s” DCF VALUATION OF “LITTLE-TARGET,” WHICH BIG-ACQUIRER IS CONSIDERING ACQUIRING.

We can dispense with Rows 1 and 2 because they merely set up the Model. Rows 3 and 4 are addressed next.

b) Row 3 of the Long-Form: Identifying the Discount Factors (DFs), the FCFs, and the TV

Row 3 requires the collection of (1) the Discount Factors for each year, (2) the projection of the FCFs for each of the years in the Projection Period, and (3) the projected TV. Each of these elements are put into the Row 3 formula as follows:

ROW 3, THE DCF LONG FORM MODEL, FOR EACH YEAR, INSERT INTO (1) THE FIRST BRACKET, THE APPLICABLE DISCOUNT FACTOR (DF), FROM THE “DISCOUNT FACTOR TABLE” [SEE TABLE SECTION V.B: DISCOUNT FACTOR TABLE]; AND (2) THE SECOND BRACKET, THE APPLICABLE (A) FCFs FROM EXCEL SHEET, STEP 1, SUB-STEP 1B, SHEET 1 OF 1; OR (B) THE TV FROM STEP 1, SUB-STEP 1C, SHEET 1 OF 1 [BOTH SUMMARIZED IN TABLE V.C: BASIC

**FACTS RE “BIG-ACQUIRER’s” DCF VALUATION OF “LITTLE-TARGET,” WHICH
BIG-ACQUIRER IS CONSIDERING ACQUIRING]:**

- $$PV = [DF\ YR\ 1]X[FCF\ YR\ 1] + [DF\ YR\ 2]X[FCF\ YR\ 2] +$$

$$[DF\ YR\ 3]X[FCF\ YR\ 3] +$$

$$[DF\ YR\ 4]X[FCF\ YR\ 4] + [DF\ YR\ 1]X[FCF\ YR\ 5] + [DF\ YR\ 6]X[TV\ YR\ 6]$$

[PV EQUALS] _____
- $$PV = [.89]X[\$5M]YR1 + [.79]X[\$10M]YR2 + [.71]X[\$15M]YR3 +$$

$$[.63]X[\$20M]YR4 + [.56]X[\$25M]YR5 + [.50]X[\$250M]YR6$$

c) Row 4, The DCF Long Form Model with Actual Discounted FCFs and TV

Fourth Row completes the computations required by the Row 3, and summarizes as follows the dollar amounts of the FCFs for each of the Projection years:

ROW 4, THE DCF LONG FORM MODEL, FILL IN FOR EACH YEAR THE PRESENT VALUES OF EACH OF THE FCFs AND TV:

$$PV = \$4.45M\ YR1 + \$7.9M\ YR2 + \$10.65M\ YR3 + \$12.6M\ YR4 + \$14M\ YR5$$

$$+ \$125M\ YR6$$

3. Summary of How the Long Form Third Step DCF Formula Approach is Employed

This *Long Form Third Step DCF Formula Approach*, converts the data developed in *Step 1*, i.e., the Target’s FCFs and TV, into present values at the Discount Rate appropriate for an acquisition by, for example, Big-Acquirer of Little-Target, determined in *Step 2*. This *Step* is illustrated above with the hypothetical acquisition of Big-Acquirer of Little-Target.

After the discussion of *Steps 4, 5, and 6* below, a simplified combined approach to these three *Steps* will be illustrated by a *Model* set out in section VIII, which is referred to here as the “*Optional Short Form Approach to Steps Three, Four, and Five in Computing the Net FMV of the Target’s Operating Assets.*”

F. The Actual Step 3, Excel Sheet 1 of 1: Computing Present Values of the Target’s FCFs and TV through the Use of the Tabular Approach

1. Applying the Excel *Long Form Third Step DCF Tabular Approach*

As discussed above, the following are methods addressed here for computing the discounted

FMV of a Target’s FCFs and TV:

(1) the Excel *Long Form Third Step DCF Formula Approach*, and

(2) the Excel *Long Form Third Step DCF Tabular Approach*.

While the preceding section focus on the *Formula Approach*, this section discusses the *Tabular Approach*, which is implemented in the following Excel Sheet:

[NEXT PAGE]

DCF VAL OF [TARGET's NAME] ⁴⁸:
LONG FORM, STEP 3,
APPLICATION OF THE MODEL,
EXCEL SHEET 1 OF 1
COMPUTING PRESENT VALUES OF THE
TARGET's FREE CASH FLOWS (FCFs)
AND TERMINAL VALUE (TV), PURSUANT TO
THE TABLE BELOW [SEE EXCEL SHEET],
WHICH CONTAINS THE FOLLOWING COLLUMNS:
[1] YEARS 1 TO 6;
[2] DISCOUNT FACTORS FOR EACH OF THE SIX YEARS;
[3] FCFs AND TV FOR EACH OF THE SIX YEARS;
[4] PRESENT VALUES OF THE FCFs AND TV.
IN ADDITION, BELOW THE TABLE IS:
[5] THE "TOTAL PRESENT VALUE OF OPERATING
ASSETS" [TPVOAs), WHICH IS THE SUM OF THE
YEARLY FCFs AND TV.
(NOTE: REPLACE THE HYPO DATA WITH
ACTUAL DATA RE REAL TARGET)

In reviewing the Excel Sheet for this Step 3, note that the principal columns with this approach are (1) column [D], which has the Discount Factors for each of the applicable years, (2) column [G], which has the FCF and TV for each of the applicable years, and [I], which has the present values of each of the applicable FCFs and TV. The row at the bottom of the table contains the total of the projected FCFs, which is not done until *Step Five* in this Model.

Note that the results with this Tabular Approach are the same as the results above with the Formula Approach.

The common results reached by these two different approaches demonstrate that with Excel there are, in many situations, multiple ways of doing the analysis and computations.

2. The Next Step, The Fourth Step.

As will be seen below, these amounts are added together in the next *Step, Step 4*.

⁴⁸ The name of the Target will appear in this and other similar brackets.

VI. FOURTH STEP: SUMMING THE PRESENT VALUES OF THE FCFs AND TV ATTRIBUTABLE T/O THE TARGET'S OPERATIONAL ASSETS AS DETERMINED IN THE THIRD STEP

A. In General, and Application of the Model

The individual present values of the Target's periodic FCFs and TV determined above in the *Third Step*, are added together in this *Fourth Step*. Thus, this *Fourth Step* gives the present value of the asset side of the Target's economic balance sheet, taking into account all operating assets, including intellectual property, not reflected on the balance sheet.

However, "Non-Operational Assets" such as (1) excess cash (that is, cash in excess of the operational needs of the business), (2) investments, and (3) similar property not used in business operations, are not included in the DCF valuation of the Target's operating business or businesses.

Therefore, these Non-Operational Assets must be valued separately as provided for in the *Sixth Step*. Also, any Non-Operational Liabilities would be deducted in computing the Net FMV of the Target's Non-Operational Assets. And, as indicated in *Step Six*, the values of the Operational and Non-Operational Assets are added to determine the fair market value of the Target's assets. (See chapter 12).

B. The Actual Step 4, Excel Sheet 1 of 1: Summing the Present Values of the Target's FCFs and TV Computed in Step 3, to Determine the FMV of the Target's Operational Assets

1. The Model

This *Fourth Step* is implemented by the attached *Step 4* Excel Spreadsheet, which is a generic form of the *Step 4* Excel Spreadsheet discussed immediately above. As will be seen, the end result of this generic form is the *Total Present Value of Operating Assets (TPVOA)*:

DCF VAL OF [TARGET's NAME] ⁴⁹:

LONG FORM⁵⁰ STEP 4, APPLICATION OF THE MODEL:

EXCEL SHEET 1 OF 1:

DETERMINING THE FMV OF

THE TARGET'S OPERATIONAL ASSETS:

SUM THE INDIVIDUAL PRESENT VALUES OF THE TARGET'S INDIVIDUAL PERIODIC FCFs AND TV, DETERMINED IN STEP 3.

THIS WILL GIVE THE PRESENT VALUE OF:

THE ASSET SIDE OF THE TARGET'S BALANCE SHEET,

TAKING INTO ACCOUNT ALL OPERATING ASSETS,

SUCH AS INTELLECTUAL PROPERTY, NOT REFLECTED ON THE BALANCE SHEET, BUT EXCLUDING "NON-OPERATIONAL ASSETS,"

SUCH AS: (1) EXCESS CASH, (2) INVESTMENTS, AND (3) SIMILAR PROPERTY NOT USED IN TARGET'S CORE BUSINESS OPERATIONS.

THIS STEP IS IMPLEMENTED BY THE SUMMATION OF THE PRESENT VALUES (PVs) IN ROW 4 ABOVE, AS FOLLOWS:

ROW 4, THE DCF MODEL, FILL IN THE PRESENT VALUES OF EACH OF THE FCFs AND TV, AND THEN ADD THESE AMOUNTS TO

COMPUTE THE "TOTAL PRESENT VALUE OF OPERATING ASSETS"

(TPVOA).

THIS TPVOA IS THE FAIR MARKET VALUE OF THE TARGET'S

OPERATING ASSETS:

$TPVOA = \$ \underline{\hspace{1cm}} + \$ \underline{\hspace{1cm}} + \$ \underline{\hspace{1cm}} + \$ \underline{\hspace{1cm}} + \$ \underline{\hspace{1cm}} + \$ \underline{\hspace{1cm}}$

$TPVOA = \$ \underline{\hspace{1cm}}$

2. How Employed

The Total Present Value of Operating Assets (TPVOA) is what this Step 4 is all about. This is computed by summing the Target's individual Present Values determined in Step 3. A note to Step 3 also sums the Present Values of those FCFs and TV.

VII. FIFTH STEP: COMPUTING THE NPV OF THE TARGET'S OPERATING ASSETS BY, INTER ALIA, SUBTRACTING THE TARGET'S OPERATING LIABILITIES FROM THE VALUE OF THE TARGET'S OPERATIONAL ASSETS DETERMINED IN THE FOURTH STEP

⁴⁹ The name of the Target will appear in this and other similar brackets.

⁵⁰ As indicated in the text, the Long Form, Steps 3, 4, and 5, are presented separately. Section VIII sets out an "Optional Short Form Approach to Steps 3, 4, and 5 in Computing the Net FMV of the Target's Operating Assets."

A. In General and Application of the Model

Importantly, since in this DCF valuation, only the asset side of a Target's economic balance sheet is being valued, it is necessary to deduct the Target's liabilities in computing the net fair market value of the Target, which is the price that the Acquirer would need to pay in an acquisition of all of the Target's operating assets with the assumption of all of the Target's operating liabilities.

Of course, the two sides of the transaction will have different views on what constitutes the Present Value of the asset side of the economic balance sheet; however, the two sides more likely will have an essentially common view of liabilities side of the economic balance sheet.

By focusing on the Target's economic balance sheet, the parties will focus on all of the Target's assets and liabilities, whether or not they are reflected on the Target's financial balance sheet.

B. The Actual Step 5, Excel Sheet 1 of 1: Computing the Net Fair Market Value of the Target's Operational Assets (NFMVTOA)

1. The Model

This *Fifth Step* determines the Net Fair Market Value of the Target's Operational Assets (NFMVTOA), taking account of the Target's liabilities that will survive the acquisition.

This is generally the maximum amount the Acquirer should pay for the Target's Operational Assets, and the minimum amount the Target's shareholders should take for those assets.

This *Step* is implemented by the attached *Step 5 Excel Spreadsheet*, which is a generic form of the *Step 5*:

[NEXT PAGE]

DCF VAL OF [TARGET's NAME]⁵¹:
LONG FORM⁵² STEP 5, APPLICATION OF THE MODEL,
EXCEL SHEET 1 OF 1,
COMPUTING THE:
NET FMV OF THE TARGET'S OPERATIONAL ASSETS (NFMVTOA),
WHICH SHOULD BE:
(1) THE MAXIMUM AMOUNT THE ACQUIRER SHOULD PAY FOR THOSE
ASSETS, AND
(2) THE MINIMUM AMOUNT THE TARGET'S SHAREHOLDERS SHOULD TAKE
FOR THOSE ASSETS.
THIS AMOUNT IS THE EXCESS OF:
(A) THE COMPUTED TOTAL PRESENT VALUE OF THOSE ASSETS, OVER
(B) THE AMOUNT OF THE LIABILITIES TO BE ASSUMED OR CREATED IN
ACQUIRING THOSE ASSETS.

2. How Employed

This *Step* is computing the Net FMV of the Target's assets by subtracting from (A) the Target's "Total Present Value of Operating Assets" (TPVOA) as determined in *Step 4*, the following (B) the amount of the liabilities or the Target to be assumed or created in acquiring the Target's assets. This excess of (A) over (B) is the amount that will be paid to the Target's shareholders.

VIII. OPTIONAL SHORT FORM APPROACH TO STEPS THREE,
FOUR, AND FIVE IN COMPUTING THE NET FMV OF THE
TARGET'S OPERATING ASSETS

A. Introduction

This section focuses on an "*Optional Short Form Approach to Steps Three, Four, and Five in Computing the Net FMV of the Target's Operating Assets.*" Thus, this *Optional Short Form Approach* presents the analyst with a possible short cut in conducting a DCF valuation. However, for clarity in the presentation, these *Third, Fourth and Fifth Steps* are set out

⁵¹ The name of the Target will appear in this and other similar brackets.

⁵² As indicated in the text, the Long Form, Steps 3, 4, and 5, are presented separately. Section VIII sets out an "Optional Short Form Approach to Steps 3, 4, and 5 in Computing the Net FMV of the Target's Operating Assets."

separately above and built into the standard *Seven Step Model*. The reader will recall that the following are these three *Steps*:

- *THIRD STEP*: DISCOUNTING TO PRESENT VALUE THE TARGET'S FCFS AND TV AT THE WACC;
- *FOURTH STEP*: SUMMING THE PRESENT VALUES OF THE FCFS AND TV ATTRIBUTABLE TO THE TARGET'S OPERATIONAL ASSETS AS DETERMINED IN THE THIRD STEP; AND
- *FIFTH STEP*: COMPUTING THE NPV OF THE TARGET'S OPERATING ASSETS BY, INTER ALIA, SUBTRACTING THE TARGET'S OPERATING LIABILITIES FROM THE VALUE OF THE OPERATIONAL ASSETS DETERMINED IN THE FOURTH STEP

This section merely introduces this Short Cut and does not provide an Excel Sheet for implementing it.

B. The Basic NPV Model

The Excel NPV function is in the following form:

$$=NPV(\text{Discount Rate}, \text{Initial Cost} + \text{FCF-1} + \text{FCF-2}, + \text{FCF-3} = \text{FCF-4} + \text{FCF-5} + \text{TV}).$$

The initial cost generally will be the only negative number, but largely because of required capital expenditures in operating the Target, there may be negative numbers in subsequent years.

In describing this function, an Excel document explains:

The NPV function syntax has the following arguments:

- **Rate** Required. The rate of discount over the length of one period.
- **Value1, value2, ...** Value1 [i.e., FCF 1] is required, subsequent values are optional. 1 to 254 arguments representing the payments and income.
 - Value1 [i.e., FCF 1], value2 [i.e., FCF 1], ... must be equally spaced in time and occur at the end of each period.
 - NPV uses the order of value1, value2, ... to interpret the order of cash flows. Be sure to enter your payment and income values in the correct sequence.
 - Arguments that are empty cells, logical values, or text representations of numbers, error values, or text that cannot be translated into numbers are ignored.
 - If an argument is an array or reference, only numbers in that array or reference are counted. Empty cells, logical values, text, or error values in the array or reference are ignored.

IX. SIXTH STEP: ADJUSTING THE NPV OF OPERATING ASSETS FOR NON-OPERATING ASSETS AND DETERMINING THE FULL FAIR MARKET VALUE OF THE TARGET'S EQUITY (FFMVT'EQ)

A. In General

The NPV of the operating assets, which is determined in *Step Five*, is not the end of the determination of the value of the Target. As a general matter, the value of the Target will be equal to the aggregate of (1) the Net FMV of the Target's operational assets, and (2) the Net FMV of the Target's non-operational assets. This *Sixth Step* addresses these two concepts in the following two Excel Sheets:

- Step 6, Sub-Step 6A, Computing the *Net FMV of Target's Non-Core Assets (NFMVT-Non-Core-A)*; and
- Step 6, Sub-Step 6B, Computing the *Full Net Fair Market Value of the Target's Equity (FNFMVT's EQ)*, which combines the net values of both the (1) Target's *Non-Core Assets*, and (2) the Target's *Operational Assets*.

B. The Actual Step 6, Sub-Step 6A Excel Sheet 1 of 1: Determining the Net Fair Market Value of the Target's Non-Operational Assets

a) The Model

If the Target has any Non-Operational Assets, then the Net Fair Market Value of these assets (i.e., the fair market value minus associated liabilities) is an addition to the value of the Operational Assets in computing the Full FMV of the Target.

Non-operational assets would include minority interests held by the Target in other corporations. Care should be given to determine whether any such assets should be valued (1) at their book value on the Target's balance sheet, or (2) at an independently determined valuation including an independent DCF valuation.

This *Sixth Step*, Sub-Step 6A, Computing Net FMV of Target's Non-Core Assets (NFMVT-Non-Core-A) is implemented by the attached *Step 6, Sub-Step 6A Excel Spreadsheet*, which is a generic form of this *Step*:

**DCF VAL OF [TARGET'S NAME]⁵³;
STEP 6, SUB-STEP 6A, APPLICATION OF THE MODEL,
EXCEL SHEET 1 OF 1:
IN COMPUTING NET FMV OF TARGET'S NON-CORE ASSETS
(NFMVT-NON-CORE-A),
THE ANALYST SHOULD APPLY
APPROPRIATE VALUATION PRINCIPLES
IN DETERMINING THE VALUE OF THE
TARGET'S ASSETS THAT ARE NOT INTEGRAL TO THE TARGET'S
CORE BUSINESS OPERATIONS,
SUCH AS EXCESS INVESTMENTS, EXCESS CASH, AND
MINORITY INTERESTS IN OTHER BUSINESSES,
WHICH ARE NOT INCLUDED IN THE DCF VALUATION.
THESE ASSETS ARE FURTHER ADDRESSED
IN STEP 6, SUB-STEP 6B.**

b) How Employed

Obviously, care will have to be given on both sides of a transaction to make sure all assets and liabilities are accounted for.

⁵³ The name of the Target will appear in this and other similar brackets.

C. The Actual Step 6, Sub-Step 6B Excel Sheet 1 of 1:
Determining the Net Fair Market Value of the Target's Combined
Operational and Non-Operational Assets

a) The Model

As indicated in determining the *Full Net Fair Market Value of the Target's Equity (FNFMT's EQ)*, the following two values are combined:

- [1] The *Value of the Target's Non-Core Assets*, after taking into account associated liabilities, if any, all as determined in Sub-Step 6A, and
- [2] The *Net FMV of the Target's Operational Assets*, as determined in Step 5.

Appendix 6B accomplishes this by computing, as follows, in Sub-Step 6B, the *FFMVT's EQ*:

DCF VAL OF [TARGET's NAME] ⁵⁴:

**STEP 6, SUB-STEP 6B, APPLICATION OF THE MODEL,
EXCEL SHEET 1 OF 1:
IN DETERMINING
THE FULL FAIR MARKET VALUE OF THE TARGET's EQUITY
(FFMVT's EQ), THE FOLLOWING TWO VALUES ARE COMBINED:
[1] THE NET FMV OF THE TARGET'S OPERATIONAL ASSETS
(NFMVTOA) AS DETERMINED IN STEP 5, AND
[2] THE VALUE OF THE TARGET's NON-CORE ASSETS,
AFTER TAKING INTO ACCOUNT ASSOCIATED LIABILITIES,
IF ANY, EACH AS DETERMINED IN SUB-STEP 6A.**

b) How Employed

With the completion of this *Step Six*, the value of all of the Target's assets less all of the Target's liabilities has been determined, that is the *Full Net Fair Market Value of the Target's Equity (FNFMT's EQ)* has been determined. On to *Step Seven*, which allocates this *Step Six Value* among the Target's creditors and equity holders.

⁵⁴ The name of the Target will appear in this and other similar brackets.

**X. SEVENTH STEP: DETERMINE A PER SHARE PRICE AND
CONDUCT A SENSITIVITY ANALYSIS**

A. In General and Application of the Model

The *Seventh* (and final) *Step* has two parts. The first part involves the determination of the price per share to be paid to the shareholders of the Target, particularly in the case of a publicly held Target. This is addressed in section X.B. Also, the Acquirer will generally conduct a sensitivity analysis with respect to such share price, based on potentially different (1) TVs, and (2) WACC Discount Rates (chapter 13), and this topic is addressed in section X.C.

**B. The Actual Step 7A, Excel Sheet 1 of 1: Allocating the
Purchase Price Among the Target's Stakeholders, Including
Stockholders and Option Holders**

a) The Model

This Sub-Step 7A is implemented by the attached Excel Spreadsheet, which is a generic form of the following Step:

DCF VAL OF [TARGET's NAME]⁵⁵:

**STEP 7, SUB-STEP 7A, APPLICATION OF THE MODEL:
EXCEL SHEET 1 OF 1:
ALLOCATING THE PURCHASE PRICE
AMONG THE TARGET'S STAKEHOLDERS,
PRINCIPALLY ITS SHAREHOLDERS AND OPTION HOLDERS:
BECAUSE EVERY CAPITAL STRUCTURE IS DIFFERENT,
THE MANNER OF ALLOCATING THE PURCHASE PRICE
AMONG THE TARGET'S STAKEHOLDERS
WILL BE LARGELY DEPENDENT ON
THE CAPITAL STRUCTURE OF THE TARGET,
AND THE ANALYST SHOULD TAKE CARE
TO ENSURE THAT EACH STAKEHOLDER RECEIVES THE
CORRECT SHARE OF THE ACQUISITION PROCEEDS.**

⁵⁵ The name of the Target will appear in this and other similar brackets.

b) How Employed

To properly make this allocation decision, it is imperative that the Target's lawyers and investment banker consult on the contractual and any other provisions impacting the allocation of the purchase price among the Target's stakeholders.

C. The Actual Step 7B, Excel Sheet 1 of 1: Conducting a Sensitivity Analysis of the Acquisition Consideration

a) The Model

This *Sub-Step 7B* is implemented by the attached Excel Spreadsheet, which is a generic form of the following Step, which addresses the Sensitivity Analysis, which is commonly referred to as a "Valuation Football Field" or "Football Field Valuation Matrix":

DCF VAL OF [TARGET's NAME]⁵⁶:

STEP 7, SUB-STEP 7B, APPLICATION OF THE MODEL:

EXCEL SHEET 1 OF 1:

CONDUCTING A SENSITIVITY ANALYSIS:

A SENSITIVITY ANALYSIS SHOULD BE DEVELOPED FOR THE TRANSACTION, AND THE ANALYSIS SHOULD ALMOST ALWAYS INCLUDE CONSIDERATION OF A RANGE OF TERMINAL VALUES AND A RANGE OF DISCOUNT RATES. AS A GENERAL MATTER, THERE IS NO RANGE OF FREE CASH FLOWS

b) How Employed

Although the DCF Model itself will produce a point estimate of the value of the Target, it is important to modify the inputs to the Model as indicated above. Although a sensitivity analysis with a range of possible values is employed in determining the price to be offered and paid for the Target in an M&A transaction, when it comes to a legal appraisal proceeding, there must be a point estimate of the value of the Target.

⁵⁶ The name of the Target will appear in this and other similar brackets.

XI. SOME CLOSING OBSERVATIONS

This Appendix 14B, which sets out a DCF valuation Model, is employed in Appendix 14C, which contains the essential inputs in this Appendix 14B for actually doing a DCF valuation. Appendix 14A employs Appendix 14C in a real life DCF valuation of Dell, a publicly held firm.

XII. ANNEX A, ILLUSTRATING THE SEVEN STEPS: (1) A SUMMARY OF THE SEVEN STEPS, AND (2) EXCERPTS FROM APPENDIX 1H TO THE BOOK, ILLUSTRATION OF THE DCF SEVEN STEPS IN J.P. MORGAN’S DCF VALUATION IN RAI, A 2021 CASE

A. INTRODUCTION

This appendix contains excerpts from the valuation related documents in the *RAI*⁵⁷ transaction. In this transaction, which took place in 2017, British American Tobacco (BAT) acquired Reynolds American Inc. (RAI), a North Carolina based tobacco company. Before the acquisition, BAT held a significant, but non-controlling interest, in RAI.

The facts, issues and holdings in this case are introduced in *Appendix 1A*; the documents implementing the transaction are excerpted in *Appendix 1H, Excerpts from Principal Valuation Related Documents in RAI, A 2021 Case: All About Terminal Value and the Perpetuity Growth Rate*; and more complete documents relating to the case are available on the Penn State Law website for this book.

⁵⁷ *Reynolds Am. Inc. v. Third Motion Equities Master Fund Ltd.*, 2020 NCBC 35 (April 27, 2020), aff’d 2021 NCSC (Dec. 17, 2021).

This document illustrates how J.P. Morgan, one of the investment bankers for RAI, applied the DCF Seven Steps in valuing RAI. In December 2021, the North Carolina Supreme Court issued its final opinion in this case⁵⁸ upholding the transaction price, which J.P. Morgan and RAI's other two investment bankers (Lazard and Goldman Sachs) had found fair to the RAI shareholders.

B. A GENERAL GUIDE TO A PROXY STATEMENT
DISCUSSION OF DCF IN SEVEN STEPS

1. GENERAL INTRODUCTION TO
THE “SEVEN STEPS” OF THE DCF
METHOD

Set out here is a summary of the Seven Steps of the DCF Method employed in this book.

2. *FIRST STEP*: FCFs AND TV

- DETERMINE:

(1) THE TARGET’S PROJECTED FREE CASH FLOWS (FCFs) FOR THE PROJECTION PERIOD, NORMALLY THE NEXT FIVE YEARS; AND

(2) THE TARGET’S TERMINAL VALUE (TV) AT THE END OF THE PROJECTION PERIOD.

⁵⁸ *Id.*

3. *SECOND STEP: THE DISCOUNT RATE*

- DETERMINE THE APPROPRIATE DISCOUNT RATE FOR THE TARGET THROUGH THE USE OF (1) THE CAPITAL ASSET PRICING MODEL (CAPM), AND (2) THE WEIGHTED AVERAGE COST OF CAPITAL (WACC).

4. *THIRD STEP: DISCOUNTING THE FCFs AND TV*

- IN DETERMINING THE VALUE OF THE TARGET'S OPERATING ASSETS, DISCOUNT TO PRESENT VALUE AT THE WACC, DETERMINED UNDER THE *SECOND STEP*, EACH OF THE TARGET'S (1) PROJECTED FCF RESULTS, AND (2) TV.

5. *FOURTH STEP: SUMMING THE PRESENT VALUE OF THE TARGET'S FCFs AND TV*

- SUM THE INDIVIDUAL PRESENT VALUES OF THE TARGET'S PERIODIC FCFs AND TV, WHICH WILL GIVE THE PRESENT VALUE OF THE ASSET SIDE OF THE TARGET'S BALANCE SHEET, TAKING INTO ACCOUNT ALL OPERATING ASSETS, INCLUDING INTELLECTUAL PROPERTY, NOT REFLECTED ON THE BALANCE SHEET, EXCLUDING "NON-OPERATIONAL ASSETS," SUCH AS (1)

EXCESS CASH, (2) INVESTMENTS, AND (3) SIMILAR PROPERTY NOT USED IN THE CORE BUSINESS OPERATIONS.

6. FIFTH STEP:

- ADD TO THE VALUE OF THE TARGET'S OPERATING ASSETS DETERMINED UNDER THE *FOURTH STEP* THE VALUE OF THE TARGET'S NON-OPERATIONAL ASSETS, SUCH AS EXCESS CASH AND INVESTMENTS.

7. SIXTH STEP:

- COMPUTE THE NET PRESENT VALUE (NPV) OF THE TARGET'S COMMON STOCK BY SUBTRACTING:
 - (1) THE AGGREGATE OF (A) THE PRESENT VALUES OF THE TARGET'S OPERATING FCFS AND TV, AND (B) THE VALUE OF THE TARGET'S NON-OPERATIONAL ASSETS, FROM
 - (2) THE INITIAL COST (IC) OF THE TARGET, THAT IS, THE AMOUNT PAID, OR TO BE PAID, FOR THE TARGET, INCLUDING, IMPORTANTLY, ANY ASSUMED DEBT OF THE TARGET AND STATED VALUE OF PREFERRED STOCK, IF ANY.

8. SEVENTH STEP:

- FINALLY, (1) DETERMINE THE PRICE PER SHARE, PARTICULARLY IN THE CASE OF A PUBLICLY HELD TARGET, AND (2) CONDUCT A SENSITIVITY ANALYSIS.

C. JP MORGAN DCF VALUATION OF RAI IN THE SEVEN STEPS IN THE PROXY STATEMENT (PG. 72, 73)

[DCF GEN] J.P. Morgan conducted a discounted cash flow analysis for the purpose of determining an implied equity value per share for RAI common stock. A discounted cash flow analysis is a method of evaluating an asset using estimates of the future unlevered free cash flows generated by the asset, and taking into consideration the time value of money with respect to those future cash flows by calculating their “present value.” The “unlevered free cash flows” refer to a calculation of the future cash flows generated by an asset without including in such calculation any debt servicing costs. “Present value” refers to the current value of the cash flows generated by the asset and is obtained by discounting those cash flows back to the present using a discount rate that takes into account macro-economic assumptions and estimates of risk, the opportunity cost of capital and other appropriate factors. “Terminal value” refers to the present value of all future cash flows generated by the asset for periods beyond the projections period. The discounted cash flow analysis conducted by J.P. Morgan treated stock-based compensation as a cash expense.

[WACC, PGR] J.P. Morgan calculated the present value of unlevered free cash flows that RAI is expected to generate during the period from calendar year 2017 through the end of 2021 using the RAI projections. J.P. Morgan also calculated a range of terminal values for RAI at December 31, 2021 by applying a terminal growth rate ranging from 0.0% to 1.0% to the RAI

projections during 2021 to derive terminal period unlevered free cash flows for RAI. The unlevered free cash flows and the range of terminal values were then discounted to present values using a range of discount rates from 5.75% to 6.75%, which range was chosen by J.P. Morgan based upon an analysis of the weighted average cost of capital of RAI, which included J.P. Morgan’s analysis of the selected companies listed under “—*Public Trading Multiples Analysis*” [.]

This analysis indicated the following range of implied equity value per share for RAI common stock, rounded to the nearest \$0.25.

RAI Implied Equity Value Per Share

| | Low | High |
|-------------------------------|------------|-------------|
| Discounted Cash Flow Analysis | \$ 47.50 | \$ 68.75 |

* * *

D. THE JP MORGAN DCF PROXY DISCUSSION IN RAI
BROKEN INTO THE SEVEN DCF STEPS

1. JP MORGAN’S INTRODUCTION
TO THE DCF METHOD

[DCF GEN] J.P. Morgan conducted a discounted cash flow analysis for the purpose of determining an implied equity value per share for RAI common stock. A discounted cash flow analysis is a method of evaluating an asset using estimates of the future unlevered free cash

flows generated by the asset, and taking into consideration the time value of money with respect to those future cash flows by calculating their “present value.”

2. JP MORGAN’S FIRST STEP:
DETERMINE: (1) THE TARGET’S
PROJECTED FREE CASH FLOWS
(FCFs) FOR THE PROJECTION
PERIOD, NORMALLY THE NEXT
FIVE YEARS; AND (2) THE
TARGET’S TERMINAL VALUE
(TV) AT THE END OF THE
PROJECTION PERIOD.

The “unlevered free cash flows” [of RAI] refer to a calculation of the future cash flows generated by an asset without including in such calculation any debt servicing costs. * * * “Terminal value” refers to the present value of all future cash flows generated by the asset for periods beyond the projections period. . . .

J.P. Morgan also calculated a range of terminal values for RAI at December 31, 2021 by applying a terminal growth rate ranging from 0.0% to 1.0% to the RAI projections during 2021 to derive terminal period unlevered free cash flows for RAI.

[Thus, while there was a point estimate of the FCFs, a range of TVs were used, which is the normal situation.]

3. JP MORGAN'S *SECOND STEP*:
DETERMINE THE APPROPRIATE
DISCOUNT RATE FOR THE
TARGET THROUGH THE USE OF
(1) THE CAPITAL ASSET PRICING
MODEL (CAPM), AND (2) THE
WEIGHTED AVERAGE COST OF
CAPITAL (WACC).

[J.P Morgan employed] a range of discount rates from 5.75% to 6.75%, which range was chosen by J.P. Morgan based upon an analysis of the weighted average cost of capital [WACC] of RAI, which included J.P. Morgan's analysis of the selected companies listed under "*—Public Trading Multiples Analysis*" [.]

[Although J.P. Morgan's valuation disclosure does not mention that Morgan used the Capital Asset Pricing Model, see chapter 8, in determining the equity component of the WACC discount rate, the Lazard disclosure in section VI.B.3 provides:

The weighted average cost of capital was derived by application of the Capital Asset Pricing Model,⁵⁹ taking into account certain metrics including target capital structure, the cost of long-term Treasury debt, tax rates, unlevered and levered betas for the selected comparable tobacco companies * * *, including RAI and BAT as appropriate, as well as certain financial metrics for the U.S. financial markets generally.]

⁵⁹ [A more accurate statement would provide something like the following "The [equity component of the] weighted average cost of capital was derived by application of the Capital Asset Pricing Model."]

4. JP MORGAN'S *THIRD STEP*: IN DETERMINING THE VALUE OF THE TARGET'S OPERATING ASSETS, DISCOUNT TO PRESENT VALUE AT THE WACC, DETERMINED UNDER THE *SECOND STEP*, EACH OF THE TARGET'S (1) PROJECTED FCF RESULTS, AND (2) TV

[See the discussion after the *Fourth Step*.]

5. JP MORGAN'S *FOURTH STEP*:
SUM THE INDIVIDUAL PRESENT
VALUES OF THE TARGET'S
PERIODIC FCFS AND TV, WHICH
WILL GIVE THE PRESENT VALUE
OF THE ASSET SIDE OF THE
TARGET'S BALANCE SHEET,
TAKING INTO ACCOUNT ALL
OPERATING ASSETS, INCLUDING
INTELLECTUAL PROPERTY, NOT
REFLECTED ON THE BALANCE
SHEET, EXCLUDING "NON-
OPERATIONAL ASSETS," SUCH AS
(1) EXCESS CASH, (2)
INVESTMENTS, AND (3) SIMILAR
PROPERTY NOT USED IN
BUSINESS OPERATIONS

J.P. Morgan calculated the present value of unlevered free cash flows that RAI is expected to generate during the period from calendar year 2017 through the end of 2021 using the RAI projections. [As discussed above,] J.P. Morgan also calculated a range of terminal values for RAI at December 31, 2021 by applying a terminal growth rate ranging from 0.0% to 1.0% to the RAI projections during 2021 to derive terminal period unlevered free cash flows for RAI. The

unlevered free cash flows and the range of terminal values were then discounted to present values using a range of discount rates from 5.75% to 6.75%, which range was chosen by J.P. Morgan based upon an analysis of the weighted average cost of capital of RAI, which included J.P. Morgan's analysis of the selected companies listed under "*—Public Trading Multiples Analysis*"

6. JP MORGAN'S *FIFTH STEP*: ADD TO THE VALUE OF THE TARGET'S OPERATING ASSETS DETERMINED UNDER THE *FOURTH STEP* THE VALUE OF THE TARGET'S NON-OPERATIONAL ASSETS, SUCH AS EXCESS CASH AND INVESTMENTS

[J.P Morgan apparently did not add value for non-operating assets such as excess cash or marketable securities. Presumably, there were on such assets or excess cash.]

7. JP MORGAN'S *SIXTH STEP*:
COMPUTE THE NET PRESENT
VALUE (NPV) OF THE TARGET'S
COMMON STOCK BY
SUBTRACTING: (1) THE
AGGREGATE OF (A) THE PRESENT
VALUES OF THE TARGET'S
OPERATING FCFS AND TV, AND
(B) THE VALUE OF THE TARGET'S
NON-OPERATIONAL ASSETS,
FROM (2) THE INITIAL COST (IC)
OF THE TARGET, THAT IS, THE
AMOUNT PAID, OR TO BE PAID,
FOR THE TARGET, INCLUDING,
IMPORTANTLY, ANY ASSUMED
DEBT OF THE TARGET AND
STATED VALUE OF PREFERRED
STOCK, IF ANY.

[This *Sixth Step* was implemented as part of the *Seventh Step* below.]

8. JP MORGAN'S SEVENTH STEP:
 FINALLY, (1) DETERMINE THE
 PRICE PER SHARE,
 PARTICULARLY IN THE CASE OF
 A PUBLICLY HELD TARGET, AND
 (2) CONDUCT A SENSITIVITY
 ANALYSIS.

This analysis indicated the following range of implied equity value per share for RAI common stock, rounded to the nearest \$0.25.

RAI Implied Equity Value Per Share

| | Low | High |
|-------------------------------|------------|-------------|
| Discounted Cash Flow Analysis | \$ 47.50 | \$ 68.75 |

The range of implied equity value per share for RAI common stock was compared to (1) the closing price per share of RAI common stock of \$47.17 on October 20, 2016, the last trading day prior to BAT's announcement of a proposal to merge with RAI.] * * *

XIII. GENERAL ANNEX B, EXCERPTS FROM APPENDIX 8B TO THE BOOK: LAZARD'S COMPUTATION IN 2017 OF RAI'S COST OF EQUITY AND WACC WITH THE UNLEVERING AND LEVERING OF RAI'S BETA

Set out below are excerpts from the following Appendix to *Corporate Valuation in M&A*:

Appendix 8B, Lazard's Computation in 2017 of RAI's Cost of Equity and WACC with the

Unlevering and Levering of RAI's Beta. This Appendix, including the footnotes set out below,

illustrates how Lazard moved from RAI's Levered Beta to its Unlevered Beta and to the other key elements in determining RAI's WACC, which includes its cost of both debt and equity.

Appendix to *Corporate Valuation in M&A: Appendix 8B, Lazard's Computation in 2017 of RAI's Cost of Equity and WACC with the Unlevering and Levering of RAI's Beta.*

Assumptions

| | |
|--|-------|
| Unlevered Beta ⁶⁰ | 0.469 |
| Target Net Debt/Capitalization | 15.0% |
| Target Net Debt/Equity | 17.6% |
| Levering Factor ⁶¹ | 1.1x |
| Levered Beta ⁶² | 0.521 |
| Effective Tax Rate | 36.5% |
| Risk-Free Rate of Return ⁶³ | 2.4% |
| Equity Risk Premium ⁶⁴ | 6.9% |
| Cost of Equity ⁶⁵ | 6.0% |
| Pre-Tax Cost of Debt ⁶⁶ | 3.9% |
| After-Tax Cost of Debt | 2.4% |
| Implied WACC ⁶⁷ | 5.5% |

⁶⁰ Unlevered Beta = Levered Beta / [1+(1 – Tax Rate)(Net Debt/Equity)].

⁶¹ Levering Factor = [1 + (1 – Tax Rate)(Net Debt/Equity)].

⁶² Barra Beta (Predicted Global) as of December 31, 2016.

⁶³ Source: 10-Year U.S. Treasury Bond Yield as of 1/13/17 and 10-Year U.K. Gilt Bond Yield as of 1/13/17.

⁶⁴ Source: Duff & Phelps 2016 Valuation Handbook.

⁶⁵ Cost of Equity (Risk-Free Rate of Return) + (Levered Beta)(Equity Risk Premium).

⁶⁶ Based on the yield for Braves and Royals long-term bonds.

⁶⁷ Weighted Average Cost of Capital = (After-Tax of Debt)(Debt/Cap.) + (Cost of Equity)(Equity/Cap.).

XIV. ANNEX C, EXCERPTS FROM SELECTED SECTIONS FROM
APPENDIX 1E TO THE BOOK, RE VALUATION RELATED
DOCUMENTS IN AOL, A 2015 CASE

A. INTRODUCTION

This appendix contains excerpts from the valuation related documents in the AOL⁶⁸ transaction, which is introduced in Appendix 1A. The documents are specified in Appendix 1B, *Table of Principal Valuation Related Documents in Time Warner and the Five Recent Valuation Cases: Dell, AOL, Clearwire, Aruba, and RAI*.

The AOL documents are listed in section IV.C of Appendix 1B, and all of the listed AOL documents are available on the Penn State Law website at <https://elibrary.law.psu.edu/valuation/>, under the heading: *Selected Principal Valuation Related Documents in the Five Recent Valuation Cases: Dell, AOL, Clearwire, Aruba, and RAI*.

B. ABBREVIATED TERMS

C. ABBREVIATIONS RELATED TO THE DCF METHOD

[SEE APPENDIX 1D FOR THE TEXT UNDER THIS SECTION]

D. ORIGINAL DOCUMENTS ON THE PENN STATE LAW
WEBSITE

[SEE APPENDIX 1D FOR THE TEXT UNDER THIS SECTION]

E. CAVEAT

[SEE APPENDIX 1D FOR THE TEXT UNDER THIS SECTION]

⁶⁸ *In re AOL Inc.*, 2018 Del. Ch. LEXIS 63 (Del. Ch. Feb. 23, 2018).

F. GENERAL DISCUSSION

1. FOR BACKGROUND SEE THE SUMMARY OF THE AOL DECISION IN SECTION IV OF APPENDIX 1A
2. INVESTMENT BANKER BLUEBOOK REPORTS

Not available.

3. PROXY STATEMENT GENERAL DISCUSSION BY ALLEN & COMPANY, INVESTMENT BANKER FOR AOL

The Company [AOL] has engaged Allen & Company as its financial advisor in connection with the transaction. In connection with this engagement, the Company requested that Allen & Company evaluate and render an opinion to the Board regarding the fairness, from a financial point of view, of the per Share consideration to be received in the transaction by holders of Shares (other than Verizon, Acquisition Sub and their respective affiliates) pursuant to the Merger Agreement. On May 11, 2015, at a meeting of the Board held to evaluate the transaction, Allen & Company rendered to the Board an oral opinion, which was confirmed by delivery of a written opinion dated May 11, 2015, to the effect that, as of that date and based on and subject to the matters described in its opinion, the \$50.00 per Share cash consideration to be received in the Offer and the Merger, taken together as a single integrated transaction, by holders of Shares (other than Verizon, Acquisition Sub and their respective affiliates) pursuant to the Merger Agreement was fair, from a financial point of view, to such holders.* * *

G. DCF DISCUSSION

[SEE THIS SECTION AS IT APPEARS ON THE PENN STATE LAW WEBSITE FOR THE BOOK]

1. INVESTMENT BANKER BLUEBOOK REPORTS ON DCF

Not available.

2. ALLEN & COMPANY, INVESTMENT BANKER FOR AOL, PROXY STATEMENT DISCUSSION OF DCF, DOC. 3

[DCF GEN, FCF, TV, CONSIDERATION OF NOLs] Allen & Company performed a discounted cash flow analysis of the Company [i.e., AOL Inc.] to calculate the estimated present value of the standalone unlevered, after-tax free cash flows that the Company was forecasted to generate during the second half of the calendar year ending December 31, 2015 through the full calendar year ending December 31, 2018 based on internal forecasts and other estimates of the Company's management. Terminal values for the Company were calculated by applying to the Company's calendar year 2018 estimated EBITDA a selected range of terminal value EBITDA multiples of 6.5x to 7.5x. The cash flows and terminal values were then discounted to present value (as of June 30, 2015) using discount rates ranging from 10.0% to 12.0%. In calculating an implied equity value reference range, the estimated present value of net operating loss carryforwards and other tax attributes of the Company expected by the Company's management to be utilized by the Company was included. This analysis indicated the following approximate

implied equity value per Share reference range for the Company, as compared to the per Share cash consideration payable in the Offer and the Merger:

| Implied Equity Value Per Share Reference Range | Per Share Consideration in Offer and Merger |
|---|--|
| \$46.88 - \$55.61 | \$50.00 |

3. AOL's VALUATION EXPERT'S
OPINIONS ON DCF: PROFESSOR
FISCHEL'S VALUATION OF AOL
(PG. 28-38)

a) [DCF GENERAL]

I determined the fair value of Petitioners' common stock of AOL as of the Valuation Date using a DCF method, generally regarded as the most reliable non-market valuation method.⁶⁹ In a DCF analysis, one estimates the value of a firm as the present value of free cash flows generated by the firm in the future, where free cash flow implies cash that can be distributed to the owners of the firm (i.e., its debt and equity holders) after accounting for the firm's reinvestment needs.

b) [THE THREE BASIC INPUTS IN A DCF MODEL]

Thus, the basic inputs to a DCF model are: (i) projections of free cash flows [FCFs] over a discrete period, (ii) an estimate of the value of the free cash flows beyond the finite period (the

⁶⁹ I considered two other commonly used valuation methods – Comparable Company and Comparable Transactions – but concluded that neither is useful in this case for two reasons. First, because of a lack of comparability between potential companies/ transactions and AOL, and second, because the Comparable Transactions methodology imputes value associated with acquisition premia and synergies to the subject company which I understand must be excluded under the Delaware appraisal statute.

“terminal value”) [TV], and (iii) an estimate of the risk-adjusted discount rate [WHICH IS THE WACC].⁷⁰

[Professor Fishel’s analysis is divided below into the following sections:

- Determination of FCFs;
- Determination of the discount rate, i.e., the WACC;
- Determination of the TV, which is a function of the FCFs and the WACC; and
- The discounting of the FCFs and TV at the WACC.]

c) [DETERMINATION OF AOL’s FCFs]

AOL management constructed projections for a four-year period (2015-2018) (the “AOL Projections”). These projections were described as the “best currently available estimates and judgements of [AOL]’s management as to the future operating and financial performance of [AOL],” and were used by AOL’s financial advisor Allen in its May 11, 2015 fairness opinion. I therefore rely on the AOL Projections in my DCF analysis.⁷¹

⁷⁰ I note that each individual input to a DCF analysis (projections, perpetuity growth rate, and discount rate) rests on assumptions that can vary widely and result in radically different valuations. These difficulties can frequently be avoided by a reliance on market prices when available, which in my opinion typically provide the best measure of the value of an asset. *See, e.g.*, Daniel R. Fischel, Market Evidence in Corporate Law, 69 The University of Chicago Law Review 941, 942 (2002). *See also* David Stowell, *An Introduction to Investment Banks, Hedge Funds & Private Equity* 78-79 (2010) (“In determining the appropriate value for a public company that is the subject of a potential acquisition or sale, the starting point is consideration of the company’s current share price. This price may represent the best indicator of fair value for a large public company without a control shareholder.... [T]he company’s stock price...is always the best barometer of value for a company in an efficient market”).

⁷¹ I understand that AOL and Allen provided Verizon and LionTree with alternative projections for certain inputs to free cash flow. I do not use these projections because I understand that they assume improvements associated with the Transaction as opposed to reflecting standalone value. *See, e.g.*, Roszkowski Dep. at 225:15-21 (These alternative projections “reflected the current state of thinking based on the assumption that a transaction would be completed and that [AOL] would be able to enjoy the benefits of an integrated offering with Verizon”). I also understand that AOL was considering several acquisitions or strategic partnerships in the period preceding the announcement date of the Transaction [...]. I also do not use projections associated with these for various reasons. First, as of the Valuation Date, none of these had occurred. Second, projections for future acquisitions and strategic partnerships are inherently more speculative than projections made by managers about the prospects of their own firm. Third, there is no way to know whether these three acquisitions/ partnerships would have been negotiated on

d) [COMPUTATION OF WACC]

(1) [INTRODUCTION]

In a DCF analysis, the discount rate reflects the rate of return that investors expect to earn as compensation for the risk they bear [for] investing in the underlying asset or company. I use the Weighted Average Cost of Capital (“WACC”) to determine the rate at which to discount the expected free cash flows. The WACC is the weighted average of the cost of equity capital and the after-tax cost of debt capital based on the company’s expected or target capital structure:

$$\text{WACC} = (\text{Cost of Equity} \times \text{Equity Weight}) + (\text{After Tax Cost of Debt} \times \text{Debt Weight})$$

(2) [DETERMINE THE COST OF
EQUITY THROUGH CAPM]

I estimate the cost of equity for AOL using the widely accepted Capital Asset Pricing Model (“CAPM”). Under the CAPM, the cost of equity is calculated as follows:

$$\text{Cost of Equity} = \text{Risk-Free Rate} + (\text{Beta} \times \text{Equity Risk Premium})$$

(a) [CAPM’s RISK FREE
RATE]

The risk-free rate in the CAPM formula is based on the yield on U.S. Government bonds. I used the yield on the 20-year bond in my calculation, which is consistent with my equity risk premium as discussed below. The yield to maturity of a 20-year bond as of June 23, 2015 was 2.92%.⁷²

the same terms if the Transaction had not occurred. [...] Fourth, I understand that the AOL Projections may include the impact of transactions such as those AOL was considering during this period.

⁷² 20-year Treasury yield as of June 23, 2015 per Federal Reserve H.15 Selected Interest Rates, <https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H15> (last accessed January 11, 2017).

(b) [CAPM's EQUITY RISK PREMIUM (ERP), SUPPLY SIDE ERP]

The equity risk premium (“ERP”) [I.E., THE DIFFERENCE BETWEEN THE EXPECTED RETURN ON THE MARKET AND THE RISK FREE RATE OF INTEREST] represents the additional return that investors demand for investing in equity securities that are riskier than safer investment such as bonds. Most valuation practitioners either use a historical ERP or a supply-side ERP. The historical ERP is calculated using historical market returns in excess of the 20-year Treasury bond and is based on the assumption that historical returns are a good proxy for future returns. The supply-side ERP incorporates forward-looking assumptions such as inflation and forecasted earnings per share growth of the S&P 500 Index, I use the supply-side equity risk premium of 6.19% as of December 31, 2014 as reported by Ibbotson SBBI.* * *

(c) [CAPM's BETA]

Beta is a statistical estimate of the systematic risk of the firm, calculated by measuring the relationship between the return to holding the firm's shares and the return to the overall market. A firm whose share price reacts more strongly to systematic risks than the overall market has a beta greater than one, whereas a firm whose price reacts less strongly to the same forces than the overall market has a beta less than one. I use AOL's actual beta calculated using two standard measures of beta: five years of monthly returns and two years of weekly returns.⁷³ As of the announcement of the Transaction, Bloomberg reports that AOL's two-year weekly beta was 1.39 and AOL's five-year monthly beta was 0.86. Given the divergence between these two and the

⁷³ I note that the default setting in Bloomberg, a commonly used data service provider, is a two-year, weekly beta. But, other services use five years of monthly returns to estimate equity betas. One survey of “academic betas” found that about two-thirds calculated their exposures with monthly frequency stock returns (even for individual stocks), with estimation periods ranging from 12 months to 60 months. [...]

fact that AOL's most profitable segment historically (Membership) was declining and the firm was shifting focus to its other segments, I also reviewed AOL's beta calculated by Bloomberg using one year of daily returns. AOL's one-year daily beta as of the announcement of the Transaction was 1.26, consistent with the five-year period being less reflective of the current and anticipated state of AOL than the two-year period.⁷⁴ To address this issue, I give the two-year beta twice as much weight as the five-year and use a beta weighted two-thirds towards the two year weekly and one-third towards the five year monthly, yielding a weighted beta of 1.21.

(d) [USE OF CAPM IN
COMPUTING AOL'S COST OF
EQUITY]

[As discussed above, the following is the CAPM formula for determining the Target's Cost of Equity (COE):]

$$\text{Cost of Equity} = \text{Risk-Free Rate} + (\text{Beta} \times \text{Equity Risk Premium})$$

In the following WACC table for AOL, Professor Fischel computes his Report's COE for AOL, which is in row [D], by applying the elements of the CAPM in rows [A] RFR, [B] Equity Risk Premium, and [C] Beta. As seen in row [D], the estimate of AOL's COE through the application of the CAPM is 10.5%.]

⁷⁴ See, e.g., Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 188 (3d ed. 2012) ("A longer estimation period provides more data, but the firm itself might have changed in its risk characteristics over the time period"); Ibbotson SBBI, *2011 Valuation Yearbook. Market Results for Stocks, Bonds, Bills, and Inflation, 1926 -2010 71-72* (2011) ("Ideally, beta should be measured over the longest time period possible. With a large number of data points, the statistical precision of the regression equation should be high. Unfortunately, as more history is included in the regression equation, the possibility for irrelevant information to be included in the analysis increases. Companies change over time, so their systematic risk can change over time as well. Including older data may bias the regression results.... If company- or industry-specific events can be identified, a shorter historical time interval may be appropriate").

**[AOL TABLE 1, PROFESSOR FISCHEL'S TABLE COMPUTING AOL'S COE, COD,
AND WACC]**

**AOL Inc.
Weighted Average Cost of Capital
As of June 23, 2015**

| Company | | Risk-free Rate [A] | Equity Risk Premium [B] | Beta [C] | Cost of Equity [D] | Pre-tax Cost of Debt [E] | Tax Rate [F] | After-tax Cost of Debt [G] | Debt / Capital [H] | WACC [I] |
|---|-----|--------------------------|----------------------------------|-------------|--------------------------|-----------------------------------|--------------------|-------------------------------------|--------------------------|---------------|
| AOL Using 5-Year Monthly Data | [J] | 2.92% | 6.19% | 0.86 | 8.24% | 4.97% | 40.0% | 2.98% | 13.68% | 7.52% |
| AOL Using 2-Year Weekly Data | [K] | 2.92% | 6.19% | 1.39 | 11.52% | 4.97% | 40.0% | 2.98% | 13.68% | 10.35% |
| AOL Using 2/3 2-Year Weekly, 1/3 5-Year Monthly | [L] | 2.92% | 6.19% | 1.21 | 10.42% | 4.97% | 40.0% | 2.98% | 13.68% | 9.41% |
| Concluded Result | | | | | 10.50% | | | | | 9.50% |

Notes and Sources:

[A] 20-year Treasury yield as of 6/23/15 per Federal Reserve H.15 Selected Interest Rates at <https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H15>.

[B] Ibbotson long-horizon expected equity risk premium (supply-side) from 1926-2014 per Ibbotson SBB1,2015 *Classic Yearbook. Market Results for Stocks, Bonds, Bills, and Inflation, 1926-2014* 158 (2015).

[C] 5-year monthly raw beta and 2-year weekly raw beta as of 5/11/15 for AOL using the S&P 500 index per Bloomberg L.P. Data as of 5/11/2015 are used because returns after 5/11/2015 will reflect effects of the merger announcement. Bloomberg L.P. calculates its monthly returns using stock prices on the last trading day of each month and weekly returns using stock prices on the last trading of each week. I note that calculating returns using Bloomberg's stock price data for AOL and S&P 500 index, but going back weekly and monthly from 5/11/2015 (which is a Monday) yields a 5-year monthly beta of 1.320 and a 2-year weekly beta of 1.276.

[D] = [A] + ([B] x [C]).

[E] Pre-tax cost of outstanding debt, calculated using LTM interest expense as of 3/31/2015 divided by principal of total debt including capital leases as of 3/31/2015 per AOL 10-Q at 12, 24 and 31, and AOL 2014 10-K at 90.

[F] A tax rate of 40% is used per Fairness Opinion at 27.

[G] = [E] x (1 - [F]).

[H] AOL's debt-to-capital calculated as the principal amount of AOL's total debt including capital leases of \$528.8 million as of 3/31/2015 divided by the sum of AOL's market capitalization of \$3,336.6 million as of 5/11/2015 (the last trading day before announcement of the Transaction) and the principal of AOL's total debt including capital leases as of 3/31/2015. \$528.8 million ÷ (\$3,336.6 million + \$528.8 million) = 13.7%. Share price of \$42.59 on 5/11/2015 per Bloomberg L.P., basic shares outstanding of 78.3 million as of 5/4/2015 per AOL 10-Q at cover page, and debt of \$528.8 million per AOL 10-Q at 24 and 31.

[I] = ([D] x (1 - [H])) + ([G] x [H]).

[L] Beta in [C] calculated as ([J] * (1/3)) + ([K] * (2/3)).

[See Exhibit H of Professor Fischel's /valuation report.]

(3) [PRE-TAX AND AFTER-TAX
COST OF DEBT].

I use AOL's actual cost of debt for the latest twelve-month period ending March 31, 2015 and calculate an after-tax cost of debt of 3.0% (using an assumed 40% tax rate). [See Rows [E], [F] and [G] of AOL TABLE 1, PROFESSOR FISCHEL'S TABLE COMPUTING AOL'S COE, COD, AND WACC.]

(4) [DEBT TO CAPITAL RATIO].

I also use AOL's actual debt-to-capital ratio as of March 31, 2015 of 13.7%. [...]

(5) [THE IMPLIED WACC]

The inputs discussed above imply a WACC of 9.5%. [...] I also considered contemporaneous WACCs used by various analysts and advisors in DCF valuations conducted in the period leading up to the announcement of the Transaction. [Reference is made by Professor Fischel to Exhibit I of his report, which is not included here]. As the exhibit shows, the median selected/midpoint WACC reported by analysts and advisors for AOL conducted between May 1 and May 11, 2015 was 10.3%, higher than my concluded WACC of 9.5%. As a robustness check, I use a range of 9.0% - 10.0% (50 basis points lower and higher respectively) in my DCF analysis.⁷⁵

*e) [TERMINAL VALUE DETERMINED IN PART
FROM THE USE OF THE WACC]*

(1) [TERMINAL VALUE, IN
GENERAL]

In a DCF analysis, the value of the business beyond the period for which an explicit forecast is available is called the terminal value. There are two standard methods for estimating terminal value: 1) the application of a terminal EBITDA multiple applied to terminal EBITDA,⁷⁶ or 2) the application of an assumed growth rate for free cash flows into perpetuity [which is the method used here].

⁷⁵ [NO SIZE PREMIUM] While some literature advocates for the inclusion of a size premium based on a company's market capitalization, I do not include one in my WACC. Were I to include a size premium, a widely recognized source, Duff & Phelps, would suggest a premium of 1.06%-1.60% based on AOL's market value of equity prior to the Valuation Date. See Duff & Phelps, *Valuation Handbook: Guide to Cost of Capital* (2015). Using this in the WACC would lower my concluded share value.

⁷⁶ For example, the TV is 10 times the Terminal Period's FCFs.

(2) [TV & THE PERPETUITY
GROWTH RATE (PGR)]

DCF models are often very sensitive to terminal value assumptions, in part because the terminal value accounts for a high proportion of the total value. [As seen below, the PV of the TV here is \$3.3 billion, and the PV of the FCFs is only \$.5 billion.] Economic theory suggests that a terminal value that incorporates or implies a growth rate into perpetuity that is lower than inflation suggests that the firm will shrink in real terms to zero. Similarly, a growth rate in excess of the expected growth rate in national nominal GDP suggests that the firm will grow to encompass the economy. Therefore, a terminal value based on a perpetuity growth rate [PGR] between [1] expected inflation, and [2] nominal GDP is generally considered appropriate.

Exhibit J summarizes expectations for both [1] the expected CPI inflation rate, and [2] the expected 10-year average real GDP rate as of the Valuation Date. [Exhibit J shows] that [1] long-term [CPI] inflation was expected to be 2.3%, and [2] nominal [not real] GDP growth was expected to be 4.6%.

I compared the range of 2.3% to 4.6% based on macroeconomic indicators to contemporaneous estimates of AOL's long-term growth rate made by analysts and financial advisors. *See* Exhibit K. As the exhibit shows, the perpetuity growth rates reported by analysts and advisors ranged from 1.0% to 6.6%, with a median of 2.5% and an average of 2.9%.

The AOL Projections do not provide estimates beyond 2018. Because of this, there is some possibility that AOL could experience growth in the short term at a rate higher than inflation due

to higher growth in the Platforms and Brands segments or even potential acquisitions. However, for the reasons discussed above, such growth cannot continue into perpetuity.

Based on the discussion above, I averaged the 2.9% perpetuity growth rate used by analysts and advisors with the 2.3% estimate of long-term inflation and the 4.6% estimate of long-term GDP growth, yielding an average rate of 3.28%. Based on this, I have selected a perpetual growth rate of 3.25%.

*f) [THE COMPUTATION OF UNLEVERED FCFs
AND PV OF THE FCFs FOR THE PROJECTION
PERIOD]*

[In computing the Unlevered FCFs and the PV of the FCFs for the Projection Period, Professor Fischel made a reference to the following accompanying exhibit of his report regarding AOL's Free Cash Flows (FCFs), with the present value shown on line [Q]:

**[AOL TABLE 2, PROFESSOR FISCHEL'S COMPUTATION OF UNLEVERED FREE
CASH FLOWS (FCFs) AND PRESENT VALUE OF FCFs]**

AOL Inc.
Discounted Cash Flow Analysis
As of June 23, 2015
(in Millions, Except Per Share Values)

| | | 2015E | 2016E | 2017E | 2018E | Normalized |
|---|-----|--------------|--------------|--------------|--------------|--------------|
| Revenue | [A] | \$2,591 | \$2,844 | \$3,250 | \$3,721 | |
| EBITDA | [B] | \$507 | \$569 | \$638 | \$716 | \$716 |
| D&A | [C] | \$194 | \$212 | \$234 | \$197 | \$142 |
| SBC | [D] | \$66 | \$84 | \$91 | \$81 | \$81 |
| Taxable EBIT | [E] | \$247 | \$273 | \$313 | \$438 | \$493 |
| Unlevered Taxes (40%) | [F] | \$99 | \$109 | \$125 | \$175 | \$197 |
| Net Operating Profit After Taxes | [G] | \$148 | \$164 | \$188 | \$263 | \$296 |
| Plus: D&A | [H] | \$194 | \$212 | \$234 | \$197 | \$142 |
| Plus: SBC | [I] | | | | | |
| Less: Increase in Working Capital | [J] | \$76 | \$86 | \$96 | \$134 | \$34 |
| Less: Capital Expenditures | [K] | \$112 | \$122 | \$124 | \$142 | \$142 |
| Unlevered FCF | [L] | \$154 | \$167 | \$201 | \$184 | \$261 |
| Unlevered FCF for Discounting | [M] | \$81 | \$167 | \$201 | \$184 | |
| Period End Date | [N] | 12/31/15 | 12/31/16 | 12/31/17 | 12/31/18 | |
| Discount Period | [O] | 0.26 | 1.02 | 2.02 | 3.02 | |
| Discount Factor | [P] | 0.98 | 0.91 | 0.83 | 0.76 | |
| PV of Free Cash Flow | [Q] | \$79 | \$152 | \$168 | \$139 | |

Notes and Sources:

[A] Per ALLEN_QP00030067 at tab "WholeCo DCF (Old CF)."

[B] Per ALLEN_QP00030067 at tab "WholeCo DCF (Old CF)." Normalized EBITDA set to 2018E.

[C] Per ALLEN_QP00030067 at tab "WholeCo DCF (Old CF)." D&A normalized to equal Capex.

[D] Per ALLEN_QP00030067 at tab "WholeCo DCF (Old CF)." Normalized SBC set to 2018E.

[E] = [B] - [C] - [D].

[F] = [E] x 40%.

[G] = [E] - [F].

[H] = [C].

[I] SBC treated as cash expense.

[J] Per ALLEN_QP00030067 at tab "WholeCo DCF (Old CF)." Normalized increase in working capital calculated as median percent change in net working capital to change in revenue from 2016 to 2018 * (2018 Revenue * perpetuity growth rate). Assuming higher levels of working capital in the terminal period will result in lower cash flows and lower concluded values.

[K] Per ALLEN_QP00030067 at tab "WholeCo DCF (Old CF)." Normalized Capex set to 2018E.

[L] = [G] + [H] - [J] - [K].

[M] 2015E prorated for 6/23/15 to 12/31/15.

[O] Discounting convention per ALLEN_QP00030067 at tab "WholeCo DCF (Old CF)" and "PV of Tax Attributes."

[P] Discount factor using periods in [O] and 9.5% WACC.

[Q] = [M] x [P].

*g) [THE COMPUTATION OF, INTER ALIA, (1)
DISCOUNTED TV, (2) DISCOUNTED FCFs, (3)
TOTAL ENTERPRISE VALUE, (4) IMPLIED EQUITY
VALUE, AND (5) IMPLIED PER SHARE PRICE,
WITH (6) RANGE TABLES*

[The following AOL Table 3, computes the bottom-line “Implied Price Per Share” through the determination of the following concepts:

[1] Discounted Terminal Value (TV) [E], which is the Present Value (PV) of the TV;

[2] Discounted FCFs [F], which is the PV of the FCFs;

[3] Total Enterprise Value [G], which is the aggregate of the Discounted TV and the Discounted FCFs;

[4] Implied Equity Value [L], which is the Total Enterprise Value, less Total Debt and Minority Interest and plus Cash and Tax Attributes; and

[5] Implied Price Per Share [N], which is \$44.85.

In addition, there are the following two sensitivity tables: (1) the Implied Purchase Price Per Share, and (B) Implied Terminal EBITDA.]

[AOL TABLE 3, PROFESSOR FISCHEL'S COMPUTATION OF, INTER ALIA, [1] DISCOUNTED TERMINAL VALUE (TV) [E]; [2] DISCOUNTED FCFs [F]; [3] TOTAL ENTERPRISE VALUE [G], [4] IMPLIED EQUITY VALUE [L], AND [5] IMPLIED PRICE PER SHARE [N], WITH [6] A RANGE TABLES FOR (a) IMPLIED PURCHASE PRICE PER SHARE, AND (b) IMPLIED TERMINAL EBITDA]

**AOL Inc.
Discounted Cash Flow Analysis
As of June 23, 2015
(in Millions, Except Per Share Values)**

| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Terminal Free Cash Flow [A]</td><td style="text-align: right;">\$270</td></tr> <tr><td>WACC [B]</td><td style="text-align: right;">9.50%</td></tr> <tr><td>Perpetuity Growth Rate [C]</td><td style="text-align: right;">3.25%</td></tr> <tr><td>Terminal Value [D]</td><td style="text-align: right;">\$4,315</td></tr> <tr><td>Discounted Terminal Value [E]</td><td style="text-align: right;">\$3,280</td></tr> <tr><td>Sum of Discounted Cash Flows [F]</td><td style="text-align: right;">\$538</td></tr> <tr><td>Total Enterprise Value [G]</td><td style="text-align: right;">\$3,818</td></tr> <tr><td>Less: Total Debt [H]</td><td style="text-align: right;">\$529</td></tr> <tr><td>Less: Minority Interests [I]</td><td style="text-align: right;">\$9</td></tr> <tr><td>Plus: Cash [J]</td><td style="text-align: right;">\$404</td></tr> <tr><td>Plus: Tax Attributes [K]</td><td style="text-align: right;">\$131</td></tr> <tr><td>Implied Equity Value [L]</td><td style="text-align: right;">\$3,815</td></tr> <tr><td>Shares Outstanding [M]</td><td style="text-align: right;">85.1</td></tr> <tr><td>Implied Price Per Share [N]</td><td style="text-align: right;">\$44.85</td></tr> <tr><td>Implied Terminal EBITDA Multiple [O]</td><td style="text-align: right;">6.3x</td></tr> </table> | Terminal Free Cash Flow [A] | \$270 | WACC [B] | 9.50% | Perpetuity Growth Rate [C] | 3.25% | Terminal Value [D] | \$4,315 | Discounted Terminal Value [E] | \$3,280 | Sum of Discounted Cash Flows [F] | \$538 | Total Enterprise Value [G] | \$3,818 | Less: Total Debt [H] | \$529 | Less: Minority Interests [I] | \$9 | Plus: Cash [J] | \$404 | Plus: Tax Attributes [K] | \$131 | Implied Equity Value [L] | \$3,815 | Shares Outstanding [M] | 85.1 | Implied Price Per Share [N] | \$44.85 | Implied Terminal EBITDA Multiple [O] | 6.3x | <p style="text-align: center;">Implied Purchase Price Per Share</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th colspan="3" style="text-align: center;">Perpetuity Growth Rate</th> </tr> <tr> <th style="text-align: center;">3.00%</th> <th style="text-align: center;">3.25%</th> <th style="text-align: center;">3.50%</th> </tr> </thead> <tbody> <tr> <th rowspan="4" style="writing-mode: vertical-rl; transform: rotate(180deg);">WACC</th> <th style="text-align: center;">9.00%</th> <td style="text-align: center;">\$47.31</td> <td style="text-align: center;">\$48.73</td> <td style="text-align: center;">\$50.27</td> </tr> <tr> <th style="text-align: center;">9.50%</th> <td style="text-align: center;">\$43.68</td> <td style="text-align: center;">\$44.85</td> <td style="text-align: center;">\$46.11</td> </tr> <tr> <th style="text-align: center;">10.00%</th> <td style="text-align: center;">\$40.57</td> <td style="text-align: center;">\$41.54</td> <td style="text-align: center;">\$42.58</td> </tr> <tr> <th></th> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="text-align: center;">Implied Terminal EBITDA Multiple</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th colspan="3" style="text-align: center;">Perpetuity Growth Rate</th> </tr> <tr> <th style="text-align: center;">3.00%</th> <th style="text-align: center;">3.25%</th> <th style="text-align: center;">3.50%</th> </tr> </thead> <tbody> <tr> <th rowspan="4" style="writing-mode: vertical-rl; transform: rotate(180deg);">WACC</th> <th style="text-align: center;">9.00%</th> <td style="text-align: center;">6.6x</td> <td style="text-align: center;">6.8x</td> <td style="text-align: center;">7.1x</td> </tr> <tr> <th style="text-align: center;">9.50%</th> <td style="text-align: center;">6.1x</td> <td style="text-align: center;">6.3x</td> <td style="text-align: center;">6.5x</td> </tr> <tr> <th style="text-align: center;">10.00%</th> <td style="text-align: center;">5.7x</td> <td style="text-align: center;">5.9x</td> <td style="text-align: center;">6.0x</td> </tr> <tr> <th></th> <td></td> <td></td> <td></td> </tr> </tbody> </table> | | | Perpetuity Growth Rate | | | 3.00% | 3.25% | 3.50% | WACC | 9.00% | \$47.31 | \$48.73 | \$50.27 | 9.50% | \$43.68 | \$44.85 | \$46.11 | 10.00% | \$40.57 | \$41.54 | \$42.58 | | | | | | | Perpetuity Growth Rate | | | 3.00% | 3.25% | 3.50% | WACC | 9.00% | 6.6x | 6.8x | 7.1x | 9.50% | 6.1x | 6.3x | 6.5x | 10.00% | 5.7x | 5.9x | 6.0x | | | | |
|--|-----------------------------|------------------------|----------------|---------|----------------------------|-------|--------------------|---------|-------------------------------|---------|----------------------------------|-------|-----------------------------------|----------------|----------------------|-------|------------------------------|-----|----------------|-------|--------------------------|-------|---------------------------------|----------------|------------------------|------|------------------------------------|----------------|--------------------------------------|------|---|--|--|------------------------|--|--|-------|-------|-------|------|-------|---------|---------|---------|-------|---------|----------------|---------|--------|---------|---------|---------|--|--|--|--|--|--|------------------------|--|--|-------|-------|-------|------|-------|------|------|------|-------|------|-------------|------|--------|------|------|------|--|--|--|--|
| Terminal Free Cash Flow [A] | \$270 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WACC [B] | 9.50% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perpetuity Growth Rate [C] | 3.25% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Terminal Value [D] | \$4,315 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Discounted Terminal Value [E] | \$3,280 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of Discounted Cash Flows [F] | \$538 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Enterprise Value [G] | \$3,818 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Less: Total Debt [H] | \$529 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Less: Minority Interests [I] | \$9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Plus: Cash [J] | \$404 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Plus: Tax Attributes [K] | \$131 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Implied Equity Value [L] | \$3,815 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shares Outstanding [M] | 85.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Implied Price Per Share [N] | \$44.85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Implied Terminal EBITDA Multiple [O] | 6.3x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Perpetuity Growth Rate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 3.00% | 3.25% | 3.50% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WACC | 9.00% | \$47.31 | \$48.73 | \$50.27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 9.50% | \$43.68 | \$44.85 | \$46.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 10.00% | \$40.57 | \$41.54 | \$42.58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Perpetuity Growth Rate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 3.00% | 3.25% | 3.50% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WACC | 9.00% | 6.6x | 6.8x | 7.1x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 9.50% | 6.1x | 6.3x | 6.5x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 10.00% | 5.7x | 5.9x | 6.0x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Notes and Sources:

[A] Normalized [L] from p. 1 of exhibit * (1 + [C]).

[B] See Exhibit H.

[C] See discussion at ¶¶ 51-54.

[D] = [A] / ([B] - [C]).

[E] = [D] discounted to 6/23/15 at [B].

[F] = Sum of [Q] from p. 1 of exhibit.

[G] = [E] + [F].

[H], [I] Total Debt and Minority Interests per Fairness Opinion at 20.

[J] Equals cash plus asset held for sale as of May 31, 2015 per AOL00258558-92 at 61 minus minimum cash balance of \$150 million per AOL00002429-98 at 61-62 (Dykstra Deposition Exhibit 2). Per the AOL 10-Q, the asset held for sale applies to an April 22, 2015 agreement "to sell 65 acres of land located in Virginia for approximately \$24.2 million in cash...[which is] expect[ed] to close...in the second quarter." AOL 10-Q at 30. Given that the cash value of the land is \$24.2 million, I have included the full amount of \$24.2 million rather than the \$16 million reflected in the assets held for sale line.

[K] See Exhibit L.

[L] = [G] - [H] - [I] + [J] + [K].

[M] See Exhibit M.

[N] = [L] / [M].

[O] = (([D] x ((1 + [B])^0.5)) / Terminal EBITDA from p.1 of exhibit). See, e.g., Joshua Rosenbaum and Joshua Pearl, *Investment Banking - Valuation, Leveraged Buyouts, and Mergers & Acquisitions* 160 (2d ed. 2013).

XV. ANNEX D, DISCOUNT FACTOR TABLE, FOR USE IN DETERMINING THE APPROPRIATE DISCOUNT RATE FOR BRINGING TO PRESENT VALUE THE TARGET'S FREE CASH FLOWS (FCFs) AND TERMINAL VALUE (TV)

The Discount Factor Table below demonstrates, for example, how much a \$1 or other amount received at a future date (from 1 year later to 6 years later) is worth today (that is, the Present Value of the \$1) assuming an implied interest (or discount) rate running from 8% to 16%. The number of years (1 to 6) on the vertical axis is chosen because that is the number of years in the Horizon Period (1 to 5 years) with the Terminal Year (year 6) in this Model, and the discount rates (from 8% to 16% are chosen because those rates of return are fairly representative of the range of rates of return in most investments.

To illustrate the Table, the present value of a \$1 to be received in five years at a 10% rate of interest is just 0.621 or 62% or 62 cents. This means that if an investor is going to receive \$1 in 5 years and the required rate of return on the investment is 10%, then the investor would be willing to pay today 62 cents for the right to receive the \$1 in five years.

DISCOUNT FACTOR TABLE: DISPLAYING DISCOUNT FACTORS FOR [1] A SPECIFIC FUTURE YEAR FROM 1 TO 6 ON THE VERTICAL AXIS; AND [2] A SPECIFIC RATE OF RETURN FROM 8% TO 16% ON THE HORIZONTAL AXIS

[NOTE THAT [1] THE HIGHEST DISCOUNT RATE (AND THE LOWEST ABSOLUTE DISCOUNT) IS 93%, WHICH IS IN THE TOP LEFT BOX FOR YEAR NO. 1, WITH AN 8% INTEREST RATE; AND [2] THE LOWEST DISCOUNT RATE (AND THE HIGHEST ABSOLUTE DISCOUNT) IS 41%, WHICH IS THE BOTTOM RIGHT BOX FOR YEAR NO. 6, WITH A 16% INTEREST RATE.]

| YR FCF AND TV RECEIVED /REQUIRED RATE OF RETURN (DISCOUNT RATE) | 8% | 9% | 10% | 11% | 12% | 13% | 14% | 15% | 16% |
|--|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|
| 1 YR | 0.926 | 0.917 | 0.909 | 0.901 | 0.893 | 0.885 | 0.877 | 0.870 | 0.862 |
| 2 YR | 0.857 | 0.842 | 0.826 | 0.812 | 0.797 | 0.783 | 0.769 | 0.756 | 0.743 |
| 3 YR | 0.794 | 0.772 | 0.751 | 0.731 | 0.712 | 0.693 | 0.675 | 0.658 | 0.641 |
| 4 YR | 0.735 | 0.708 | 0.683 | 0.659 | 0.636 | 0.613 | 0.592 | 0.572 | 0.552 |
| 5 YR | 0.681 | 0.650 | 0.621 | 0.593 | 0.567 | 0.543 | 0.519 | 0.497 | 0.476 |

| | | | | | | | | | |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6 YR | 0.630 | 0.596 | 0.564 | 0.535 | 0.507 | 0.480 | 0.456 | 0.432 | 0.410 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|

XVI. ANNEX E, THE SPREADSHEET ANNEX IN “MICROSOFT EXCEL”: THE 24 EXCEL SPREADSHEETS IMPLEMENTING THE SEVEN-STEP DCF MODEL

A. A Brief Introduction

As indicated, this *Model* is effectuated pursuant to *Seven-Steps*, many of which have *Sub-Steps*, that are implemented through 24 separate Excel spreadsheet one for each *Step* or *Sub-Step*. The Word versions of these spreadsheets are discussed and set out in the text of this Appendix B and are also set out without the background discussion in Annex H to this Appendix B. These Excel spreadsheets are attached to this document in Annex I.

Thus, this Annex I contains the Excel version of each of these 24 spreadsheets. Although the substance of the Word and Excel versions are designed to be the same, there are many natural differences in the presentations of the two versions.