

ACCOUNTING & VALUATION GUIDE

Valuation of Privately-Held-Company Equity Securities Issued as Compensation

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Preface

About This AICPA Accounting and Valuation Guide

This AICPA Accounting and Valuation Guide has been developed by the AICPA Equity Securities Task Force (task force) and AICPA staff. This guide provides guidance and illustrations for preparers of financial statements, independent auditors, and *valuation specialists*^{1,2} regarding the accounting for, valuation of, and disclosures related to, privately held company equity securities issued as compensation. The valuation guidance in this guide is focused on measuring *fair value* of privately held company equity securities issued as compensation for financial reporting purposes.

The financial accounting and reporting guidance contained in this guide has been reviewed and approved by the affirmative vote of at least two-thirds of the members of the Financial Reporting Executive Committee (FinREC), which is the designated senior committee of the AICPA authorized to speak for the AICPA in the areas of financial accounting and reporting. Conforming changes made to the financial accounting and reporting guidance contained in this guide will be approved by the FinREC Chair (or his or her designee). Updates made to the financial accounting and reporting guidance in this guide exceeding that of conforming changes will be approved by the affirmative vote of at least two-thirds of the members of FinREC.

This guide

- identifies certain requirements set forth in the Financial Accounting Standards Board (FASB) *Accounting Standards Codification*TM (ASC).
- describes FinREC's understanding of prevalent or sole practice concerning certain issues. In addition, this guide may indicate that FinREC expresses a preference for the prevalent or sole practice, or it may indicate that FinREC expresses a preference for another practice that is not the prevalent or sole practice; alternatively, FinREC may express no view on the matter.
- identifies certain other, but not necessarily all, practices concerning certain accounting issues without expressing FinREC's views on them.
- provides guidance that has been supported by FinREC on the accounting, reporting, or disclosure treatment of transactions or events that are not set forth in FASB ASC.

¹ Words or terms defined in the glossary are set in italicized type the first time they appear in this guide.

² Although this guide uses the term *valuation specialist*, Statement on Standards for Valuation Services No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100) (which is discussed in chapter 13, "Elements and Attributes of a Valuation Report"), defines a member who performs valuation services as a *valuation analyst*. The term *valuation specialist*, as used in this guide, is synonymous to the term *valuation analyst*, as used in *AICPA Professional Standards*.

When referring to the valuation specialist in this guide, it is commonly presumed that the valuation specialist is an external party, but if individuals within the entity possess the abilities, skills, and experience to perform valuations, they can also serve in the capacity of a valuation specialist.

Accounting guidance for nongovernmental entities included in this AICPA Accounting and Valuation Guide is a source of nonauthoritative accounting guidance. FASB ASC is the authoritative source of U.S. accounting and reporting standards for nongovernmental entities, in addition to guidance issued by the Securities and Exchange Commission. AICPA members should be prepared to justify departures from U.S. generally accepted accounting principles, as discussed in Rule 203, *Accounting Principles* (AICPA, *Professional Standards*, ET sec. 203 par. .01). In addition, AICPA members who perform engagements to estimate value that culminate in the expression of a conclusion of value or a calculated value are subject to the requirements of AICPA Statement on Standards for Valuation Services.

This guide does not include auditing guidance;³ however, auditors may use it to obtain an understanding of the accounting requirements and the valuation process applicable to privately issued securities.

Recognition

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³ In October 2011, the AICPA Auditing Standards Board (ASB) issued Statement on Auditing Standards (SAS) No. 122, *Statements on Auditing Standards: Clarification and Recodification* (AICPA, *Professional Standards*), which contains 39 clarified SASs and supersedes all outstanding SASs through SAS No. 121, except for 8 SASs. SAS No. 122 represents the redrafting of existing SASs to apply the ASB's clarity drafting conventions and to converge with International Standards on Auditing. SAS No. 122 is effective for audits of financial statements for periods ending on or after December 15, 2012. Refer to individual sections for specific effective date language.

AU-C section 540, *Auditing Accounting Estimates, Including Fair Value Accounting Estimates, and Related Disclosures* (AICPA, *Professional Standards*), addresses the auditor's responsibilities relating to accounting estimates, including fair value accounting estimates and related disclosures, in an audit of financial statements. This section supersedes AU section 342, *Auditing Accounting Estimates* [SAS No. 57], and AU section 328, *Auditing Fair Value Measurements and Disclosures* [SAS No. 101]. AU-C section 540 combines the requirements and guidance from AU section 342 [SAS No. 57] and AU section 328 [SAS No. 101], but it does not change or expand those standards in any significant respect.

Auditors may also find it helpful to refer to the AICPA Audit Guide *Special Considerations in Auditing Financial Instruments*, which, among other things, addresses the auditor's responsibilities relating to auditing accounting estimates, including fair value accounting estimates, and related disclosures.

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Guidance Considered in This Edition

Authoritative guidance issued through May 1, 2013, has been considered in the development of this edition of the guide. This guide includes relevant guidance issued up to and including the following:

- FASB Accounting Standards Update No. 2013-13, *Presentation of Financial Statements (Topic 205): Liquidation Basis of Accounting*
- AICPA's Statement on Standards for Valuation Services (SSVS) No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100)

Readers of this guide should consider guidance issued subsequent to those items listed previously to determine their effect on entities covered by this guide. In determining the applicability of recently issued guidance, its effective date should also be considered.

AICPA.org Website

The AICPA encourages you to visit its website at www.aicpa.org and the Financial Reporting Center at www.aicpa.org/FRC. The Financial Reporting Center supports members in the execution of high-quality financial reporting. Whether you are a financial statement preparer or a member in public practice, this center provides exclusive member-only resources for the entire financial reporting process and provides timely and relevant news, guidance and examples supporting the financial reporting process, including accounting, preparing financial statements and performing compilation, review, audit, attest or assurance and advisory engagements. Certain content on AICPA websites referenced in this guide may be restricted to AICPA members only.

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Introduction

.01 The purpose of this guide is to provide guidance to privately held enterprises¹ at all stages of development regarding the valuation of, and disclosures related to, their equity securities issued as compensation. This guide is not intended to focus on estimating the value of an enterprise as a whole but, rather, the fair value of individual common shares or other equity securities that constitute a minority of the outstanding securities. Such shares are collectively referred to hereinafter as privately issued securities. The guidance is intended to provide assistance to management and boards of directors of enterprises that issue such securities; valuation specialists; auditors; and other interested parties, such as creditors. This guide is not intended to serve as a detailed "how to" guide but, rather, to provide (a) an overview and understanding of the valuation process and the roles and responsibilities of the parties to the process and (b) best practice recommendations.

.02 For a number of reasons, a privately held enterprise may grant stock, options, warrants, or other potentially dilutive securities to employees and others in exchange for goods or services. Given the absence of an *active market*, the fair value of the privately issued securities is estimated based on a variety of enterprise- and industry-specific factors for the purpose of measuring the cost of the transaction and properly reflecting it in the enterprise's financial statements.

.03 The value of common shares constitutes one of the inputs to option pricing models when options, rather than shares, are the equity securities issued. Companies may also issue securities other than common stock or options as compensation; for example, the valuation for financial reporting purposes of profits interests issued by a limited liability company would also fall within the scope of this guide.² The principles in this guide may also be applied to the valuation of other securities within the capital structure, such as minority interests in preferred stock, warrants on preferred or common stock, or other claims on the enterprise; however, those valuations were not the primary focus of the guide.

Background

.04 Enterprises with privately issued securities have historically estimated the fair value of their common stock in one of four ways: use of general "rule of thumb" discounts from prices of other securities, internal valuation based on management's (or the board of directors') best estimate, substantial sales to unrelated third parties, or valuation by an unrelated valuation specialist. In estimating the fair value of common stock based on management's best estimate, fair value is typically estimated by assessing relevant factors at each security's issuance date. Factors to consider include

¹ This guide uses the terms *enterprise* and *company* interchangeably.

² Throughout the guide, the term *common stock* should be considered to include common stock and other junior securities with similar rights and preferences. Similarly, the term *preferred stock* should be considered to include preferred stock and other senior securities with similar rights and preferences.

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- recent issuances of preferred stock and the associated economic and control rights relative to the rights associated with common stock;
- recent transactions in the common stock of the enterprise, if any;³
- the enterprise's financial condition and operating results;
- the enterprise's stage of operational development and progress in executing its business plan;
- significant product or service development milestones and the introduction of new product offerings;
- the composition of, and anticipated changes in, the management team;
- the lack of a public market for the common stock; and
- the prospects and anticipated timing of any potential future public offering of common stock.

.05 Historically, many privately held enterprises, especially early-stage enterprises, have used general "rule of thumb" discounts in estimating the fair value of common stock, such as estimating the value as a specified percentage of the price of the most recent round of preferred stock or at a discount to the anticipated initial public offering (IPO) price for an enterprise actively considering an IPO. Although the fair value of privately issued securities of an enterprise considering an IPO may be less than the ultimate offering price, such "rule of thumb" discounts are inappropriate because they are difficult to substantiate objectively and do not result in a high-quality fair value estimate.⁴

.06 Throughout this guide, estimating fair value is discussed in two different contexts: valuation of privately issued securities and valuation of an enterprise. The ultimate objective of this guide is to provide guidance on valuation of privately issued securities. However, many valuation methods (often referred to as *top-down methods*) involve first valuing the enterprise, subtracting the fair value of debt to value the equity (if needed), and then using that equity valuation as a basis for allocating the equity value among the enterprise's privately issued securities, including individual common shares or other equity securities that constitute a minority of the outstanding securities. Wherever valuation techniques⁵ for enterprise valuation are discussed in this guide, it is

³ See chapter 8, "Inferring Value From Transactions in a Private Company's Securities."

⁴ At the September 20, 2001, *Emerging Issues Task Force (EITF)* meeting, during the discussion of matters from the EITF Agenda Committee meeting, the EITF observed that the use of a "rule of thumb" is not (and never has been) an appropriate method for estimating the fair value of a company's common stock. The Securities and Exchange Commission (SEC) observer noted that guidance regarding valuation of equity instruments can be found in section II.I. of the Division of Corporation Finance's *Current Accounting and Disclosure Issues* (August 31, 2001). In that guidance, the SEC staff noted, among other issues, its concerns about reliance on undocumented or unsubstantiated "rules of thumb."

⁵ Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 820, *Fair Value Measurement*, refers to valuation approaches and valuation techniques; however, Statement on Standards for Valuation Services (SSVS) No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100), refers to valuation approaches and methods (not techniques). SSVS No. 1 defines *valuation method* as "[w]ithin approaches, a specific way to determine value." This definition is consistent with the meaning attributed to valuation techniques in FASB ASC 820. Also, in practice, many valuation techniques are referred to as methods (for example, guideline public company method, guideline company transactions method, discounted cash flow method, real options method, asset accumulation method, yield method, and so on). As a result, this guide uses the terms *technique* and *method* interchangeably to refer to a specific way of determining value within an approach.

important to understand that those valuation techniques are presented solely for the ultimate purpose of valuing the enterprise's privately issued securities.

.07 This guide identifies what the Equity Securities Task Force (task force) members perceive as best practices for the valuation of, and disclosures related to, privately held company equity securities issued as compensation.

.08 In the context of discussing accounting issues or concepts, the word *should* is used in this guide only if a particular statement is in accordance with accounting principles generally accepted in the United States of America (GAAP). Phrases such as *the task force believes* or *the task force recommends* are used to indicate the task force's opinion if a particular statement in this guide, although not in conflict with GAAP, relates to an issue for which guidance is not specifically prescribed by GAAP or if there are alternative treatments of the particular issue. In the context of discussing valuation issues or concepts, no specific valuation standards exist that address detailed aspects when valuing privately held company equity securities issued as compensation. (The concept of accepted valuation standards is discussed in paragraph 4.04.) As a result, in this context, the word *should* is generally used in this guide to indicate the task force's opinion as a whole, although individual or firm positions may differ. This guide is not intended to set valuation standards or interpret any other valuation standards that exist in practice.

Scope

.09 The scope of this guide is limited to valuations of equity securities issued by privately held enterprises,⁶ including privately held enterprises that have made a filing with a regulatory agency in preparation for the sale of any class of their equity securities in a public market, for use in the issuer's financial statements. This guide is applicable to transactions in which an entity exchanges its equity instruments for goods or services. It also applies to share-based payments to both employees and nonemployees. The scope does not include enterprises that issue equity securities as part of a business combination. Although this guide may contain some useful information, such as valuation techniques and best practices relevant to such valuations, the numerous and varied aspects of business combinations were not considered or contemplated in the preparation of this guide. Similarly, although this guide may have some use in valuations of privately issued securities by or for enterprises or individuals that hold such securities⁷ or for tax purposes, it was not written intending to address those valuations.

.10 Because securities issued to employees or nonemployees in exchange for goods and services are almost invariably minority interests,⁸ the focus of this guide is on the valuation of minority interests.

⁶ The scope of this guide also includes enterprises that issue public debt but whose equity securities are privately held.

⁷ The AICPA currently expects to undertake a project on determining fair value of portfolio company investments of venture capital and private equity firms, which is intended to explicitly address the valuation of these investments. Venture capital and private equity firms may also want to consider the guidance in the forthcoming AICPA Accounting and Valuation Guide *Testing Goodwill for Impairment* (which is expected to be issued by the end of 2013) and the AICPA Audit Guide *Special Considerations in Auditing Financial Instruments*.

⁸ It should be noted that the minority interest discussed in this guide is from the perspective of the holder. This is different from a noncontrolling interest (also sometimes referred to as minority interest) addressed in FASB ASC 810, *Consolidation*, which is from the perspective of the parent.

Information Included in This Guide

.11 This guide provides the task force's views regarding best practices for the valuation of, and disclosures related to, privately held company equity securities issued as compensation:

- *Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) 718, Compensation—Stock Compensation*, and 505-50 provide guidance on how to account for transactions in which an entity exchanges its equity instruments for goods or services. FASB ASC 718 addresses share-based payments to employees, and FASB ASC 505-50 pertains to share-based payments to nonemployees. These FASB ASC topics also address transactions in which an entity incurs liabilities in exchange for goods or services that are based, at least in part, on the fair value of the entity's equity instruments or that may be settled by issuance of those equity instruments. FASB ASC 718 and 505-50 set forth guidance on valuation of equity instruments when those instruments are awarded for goods or services (including private equity securities). In general, FASB ASC 718 and 505-50 rely on the concept of fair value; however, the application of fair value in these arrangements does not factor in vesting provisions and provides for a few other exceptions to fair value (for example, *reload features*). As such, the measurement method in FASB ASC 718 and 505-50 is referred to as fair value based. See chapter 1, "Concepts of Fair Value of Equity Securities."
- The objective of this guide is to describe best practices for estimating the fair value of a *minority interest* in an enterprise's privately issued securities. Because the value of the enterprise and the value of the securities within the enterprise are related, the guide also discusses factors to be considered in estimating the value of the enterprise and the equity within the enterprise. See paragraph .06.
- The stage of development of an enterprise is an important determinant of the value of the securities within an enterprise and an indicator concerning which valuation approach or approaches are generally more appropriate. See chapters 2, "Stages of Enterprise Development," and 9, "Relationship Between Fair Value and Stages of Enterprise Development."
- A valuation specialist typically considers the following factors in performing a valuation for an enterprise and its securities:
 - Milestones achieved by the enterprise
 - State of the industry and economy
 - Experience and competence of management team and board of directors
 - Marketplace and major competitors
 - Barriers to entry
 - Competitive forces
 - Existence of proprietary technology, products, or services
 - Work force and work force skills

- Customer and vendor characteristics
- Strategic relationships with major suppliers or customers
- Major investors in the enterprise
- Enterprise cost structure and financial condition
- Attractiveness of industry segment
- Risk factors faced by the enterprise
- Other qualitative and quantitative factors

See chapter 3, "Factors to Be Considered in Performing a Valuation."

- The three approaches to estimating the value of an enterprise and its securities are the market, income, and asset approaches.⁹ See chapter 4, "Overview of Valuation Approaches." Valuation specialists generally consider more than one valuation technique, selecting a valuation technique or techniques that are appropriate for the circumstances. It is common for the results of one valuation technique to be used to corroborate or otherwise be used in conjunction with one or more other valuation techniques:
 - The *market approach* bases the value measurement on market data (for example, valuing an enterprise based on values for comparable public companies or similar transactions or valuing securities based on transactions in similar securities). Another method for valuing an enterprise within the market approach is to derive an indication of the total *equity value* from a recent transaction involving the company's own securities (for example, a recent financing round). See chapters 5, "Valuation of Equity Securities in Simple Capital Structures," and 8, "Inferring Value From Transactions in a Private Company's Securities."
 - The *income approach* seeks to convert future economic benefits into a present value for the enterprise or its securities. See chapters 5 and 6, "Valuation of Equity Securities in Complex Capital Structures."
 - The *asset approach* estimates the value of an enterprise or its securities based on the principle that the equity

⁹ FASB ASC 820 describes three valuation approaches: market, income, and cost. The concepts underlying FASB market, income, and cost approaches apply broadly to the valuation of discrete assets and business enterprises. Within FASB's cost approach concept, practitioners distinguish valuations of individual assets and business enterprises by using different terminology. The cost approach is said to have been applied when valuing individual assets, and the asset approach is said to have been applied when valuing business enterprises. The *International Glossary of Business Valuation Terms*, which has been adopted by a number of professional societies and organizations, including the AICPA, and is included in appendix B of SSVS No. 1, defines *asset approach* as "[a] general way of determining a value indication of a business, business ownership interest, or security using one or more methods based on the value of the assets net of liabilities." This guide addresses valuation of securities within privately held enterprises. As a result, this guide focuses on the three approaches that can be used to value an enterprise (market, income, and asset) and only briefly describes the cost approach in the context of valuing individual assets.

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value is equivalent to the values of its individual assets net of its liabilities. See chapter 5.

- In standard valuation theory, value may be measured on a controlling or minority-interest basis and a marketable or nonmarketable basis. Adjustments to the value may be needed when estimating the fair value of an interest on a specified basis. The appropriate *basis of valuation* varies depending on the objective of the analysis. See chapter 7, "Control and Marketability."
- A number of factors may contribute to a difference between the fair value of an enterprise's privately issued equity securities prior to an *initial public offering* (IPO) and the ultimate IPO price. Among those factors are (a) whether the enterprise achieved business milestones during the periods preceding the IPO (which may change the amount, relative timing, and likelihood of expected future net cash flows) and (b) broader macroeconomic factors. In addition, the IPO generally reduces the newly public enterprise's *cost of capital* by providing it access to more liquid and efficient capital markets. Such factors need to be considered in the context of the facts and circumstances of the enterprise in valuing privately issued securities in the periods preceding an IPO. See chapter 10, "Valuation Implications of a Planned Initial Public Offering."
- The reliability of a valuation specialist's fair value estimate is affected by the timing of the valuation (contemporaneous versus retrospective) and the objectivity of the valuation specialist (unrelated versus *related party*). Generally, the most reliable and relevant fair value estimate is produced by a *contemporaneous valuation* performed by an unrelated valuation specialist; however, different alternatives are available. Regardless of whether fair value measurements are developed by management or a third party, management is responsible for the measurements that are used to prepare the financial statements and for underlying assumptions used in developing those measurements. See chapter 11, "Reliability of the Valuation."
- It is recommended that a valuation report be written so as to enhance management's ability to
 - evaluate the valuation specialist's knowledge of the enterprise and industry.
 - determine whether the valuation specialist considered all factors relevant to the valuation.
 - understand the assumptions, models, and data the valuation specialist used in estimating fair value; evaluate those assumptions and data for reasonableness; and evaluate those models for appropriateness.

See chapter 13, "Elements and Attributes of a Valuation Report."

- In addition to the disclosures required by GAAP, the task force recommends that financial statements included in a registration statement for an IPO disclose, at a minimum, the following information for equity instruments granted during the 12 months

prior to the date of the most recent balance sheet (year-end or interim) included in the registration statement:

- For each grant date, the number of equity instruments granted, the exercise price and other key terms of the award, the fair value of the common stock at the date of grant, and the intrinsic value, if any, for the equity instruments granted. (The equity instruments granted may be aggregated by month or quarter and the information presented as weighted average per share amounts.)
- Whether the valuation used to estimate the fair value of the equity instruments was contemporaneous or retrospective

See chapter 14, "Accounting and Disclosures."

- In addition to the requirements of the Securities and Exchange Commission for management's discussion and analysis (MD&A), the task force recommends that MD&A in a registration statement for an IPO include the following information relating to equity instruments granted during the 12 months prior to the date of the most recent balance sheet (year-end or interim) included in the registration statement. The task force believes these disclosures would assist readers in assessing the inputs the enterprise used to develop measurements related to share-based compensation and the effects of those measurements on earnings for the period.
 - A discussion of the significant factors, assumptions, and valuation techniques used in estimating the fair value of the securities. With respect to assumptions, they are often highly correlated; therefore, it may not be helpful to disclose just one or two of the assumptions.
 - A discussion of each significant factor contributing to the difference between the fair value as of the date of each grant and the estimated IPO price.

See chapter 14.

Chapter 1

Concepts of Fair Value of Equity Securities

1.01 Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 718, *Compensation—Stock Compensation*, and 505-50 provide guidance on how to account for transactions in which an entity exchanges its equity instruments for goods or services. FASB ASC 718 addresses share-based payments to employees, and FASB ASC 505-50 pertains to share-based payments to nonemployees.

1.02 In general, FASB ASC 718 and 505-50 rely on the concept of fair value. Under FASB ASC 718 and 505-50, *fair value* is defined as "[t]he amount at which an asset (or liability) could be bought (or incurred) or sold (or settled) in a current transaction between willing parties, that is, other than in a forced or liquidation sale."

1.03 That definition refers explicitly only to assets and liabilities, but the concept of value in a current exchange embodied in that definition applies equally to the equity instruments subject to FASB ASC 718 and 505-50. According to paragraphs 10–11 of FASB ASC 718-10-55, observable market prices of identical or similar equity or liability instruments in active markets are the best evidence of fair value and, if available, should be used as the basis for the measurement of equity and liability instruments awarded in a share-based payment transaction. If observable market prices of identical or similar equity or liability instruments of the entity are not available, the fair value of equity and liability instruments awarded should be estimated by using a valuation technique (such as an option pricing model).

1.04 A valuation performed for the purpose of valuing privately held company securities issued as compensation under accounting principles generally accepted in the United States of America should be based on the definition of *fair value* used in FASB ASC 718 and 505-50. It should be noted that this definition of fair value is slightly different from the definition in FASB ASC 820, *Fair Value Measurement*,¹ in which *fair value* is defined as "[t]he price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date."

¹ Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 820, *Fair Value Measurement*, guidance included in this guide reflects amendments in FASB Accounting Standards Update (ASU) No. 2011-04, *Fair Value Measurement (Topic 820): Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRSs*. ASU No. 2011-04, which was issued in May 2011, does not extend the use of fair value accounting but provides guidance on how it should be applied when its use is already required or permitted by other standards. ASU No. 2011-04 supersedes most of the guidance in FASB ASC 820, although many of the changes are clarifications of existing guidance or wording changes to align with International Financial Reporting Standard No. 13, *Fair Value Measurement*. It also reflects FASB's consideration of the different characteristics of public and nonpublic entities and the needs of users of their financial statements. Nonpublic entities are exempt from a number of the new disclosure requirements. ASU No. 2011-04 also provides guidance for measuring the fair value of an instrument classified in a reporting entity's shareholders' equity.

The amendments in ASU No. 2011-04 are to be applied prospectively. For public entities, the amendments are effective during interim and annual periods beginning after December 15, 2011. For nonpublic entities, the amendments are effective for annual periods beginning after December 15, 2011. Early application by public entities is not permitted. Nonpublic entities may apply the amendments in ASU No. 2011-04 early but no earlier than for interim periods beginning after December 15, 2011. Readers should refer to the FASB website for more information.

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1.05 FASB ASC 820 establishes a framework for measuring fair value and requires disclosures about fair value measurements. FASB ASC 820 is a broad principles-based standard that applies to all entities, transactions, and instruments that require or permit fair value measurements. However, FASB ASC 820-10-15-2 indicates that the guidance in FASB ASC 820 does not apply to accounting principles that address share-based payment transactions. In particular, the application of fair value in share-based payment arrangements does not factor in vesting provisions and provides for a few other exceptions to fair value (for example, reload features). As such, these measures are considered fair value-based measures rather than fair value measures. Therefore, even though some measurements used within FASB ASC 718 and 505-50 may be fair value measures, for practical reasons, FASB decided to exclude these pronouncements from FASB ASC 820 in their entirety.²

1.06 Even though FASB ASC 820 technically does not apply when valuing private company equity securities granted under FASB ASC 718 or 505-50, the fair value concepts in FASB ASC 820, 718, and 505-50 are closely aligned, and the Equity Securities Task Force (task force) believes that the valuation of private company equity securities granted under FASB ASC 718 or 505-50 generally would be consistent with the valuations performed for purposes of FASB ASC 820. Furthermore, the task force believes that FASB ASC 820 contains some concepts that practitioners may find helpful when estimating fair value in connection with share-based payment transactions. Therefore, the task force recommends following the measurement guidance in FASB ASC 820 when accounting for share-based payment transactions unless it is inconsistent with the guidance in FASB ASC 718 or 505-50. For example:

- If stock is restricted from sale to other than qualified institutional buyers under Securities and Exchange Commission (SEC) Rule 144A, the restriction is a characteristic of the equity instrument and, therefore, would be transferred to *market participants*. In that case, under FASB ASC 820-10-55-52, the fair value of the unrestricted equity instrument would be adjusted to reflect the effect of the restriction.
- However, based on guidance in paragraphs 17–19 of FASB ASC 718-10-30, a limited population of transferees is not a prohibition. As such, the value of a nonvested share granted to an employee would not be discounted due solely to the fact that the share could be transferred only to a limited population of investors. Therefore, under the guidance in FASB ASC 718, a restriction under SEC Rule 144A would not be taken into account when estimating the fair value of the securities.³

1.07 The definitions of *fair value* used in FASB ASC 718, 505-50, and 820 appear similar to the definition of *fair market value* as defined by the

² FASB explained its rationale for excluding FASB ASC 718, *Compensation—Stock Compensation*, and 505-50 from the scope of FASB ASC 820 in paragraph C8 of FASB Statement No. 157, *Fair Value Measurements*. Paragraph C8 of FASB Statement No. 157 was not codified in FASB ASC; however, the Equity Securities Task Force (task force) believes it provides helpful guidance and, therefore, decided to incorporate it in this guide. Although share-based payment transactions are excluded from the scope of FASB ASC 820, the fair value measurement objective in FASB ASC 718 and 505-50 is generally consistent with the fair value measurement objective in FASB ASC 820.

³ However, for tax purposes, such restrictions typically are considered in estimating the fair market value of the securities. As such, the valuation of securities under Internal Revenue Code Section 409A may differ from the valuation of such securities under FASB ASC 718.

International Glossary of Business Valuation Terms and IRS Revenue Ruling 59-60. The *International Glossary of Business Valuation Terms* defines fair market value as

the price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arm's length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts.

1.08 IRS Revenue Ruling 59-60 defines *fair market value* as "the price at which property would change hands between a willing buyer and a willing seller when the former is not under any compulsion to buy and the latter is not under any compulsion to sell, both parties having reasonable knowledge of relevant facts."

1.09 When deliberating FASB Statement No. 157, *Fair Value Measurements*, FASB agreed that the measurement objective encompassed in the definition of fair value used for financial reporting purposes is generally consistent with similar definitions of fair market value used for valuation purposes. However, FASB observed that the definition of fair market value relates principally to assets (property). Further, the definition has a significant body of interpretive case law developed in the context of tax regulation. Because such interpretive case law, in the context of financial reporting, may not be relevant, FASB chose not to adopt the definition of fair market value and its interpretive case law for financial reporting purposes.⁴ Thus, when performing dual-purpose valuations for both tax and financial reporting purposes (for example, to value common stock for compliance with Internal Revenue Code [IRC] Section 409A and for financial reporting in connection with FASB ASC 718 or 505-50), it is important to understand the differences in the definitions of fair value and fair market value.

1.10 For minority interests, the unit of valuation is the minority interest, not the overall enterprise. In particular, although all the standards of value discussed previously contemplate a transfer of the asset on the measurement date, the asset to be considered is the minority position. Therefore, the market participant or willing buyer contemplated in the fair value definitions discussed previously is the hypothetical buyer for the minority interest, not a hypothetical buyer for the entire enterprise. Because a market participant who purchases a minority interest in the enterprise would be unable to change the company's strategy, it is appropriate for the valuation to consider the plans of the enterprise under current ownership rather than assuming a sale of the enterprise on the measurement date.

1.11 To increase consistency and comparability in fair value measurements and related disclosures, FASB ASC 820 establishes a fair value hierarchy that categorizes into three levels the inputs to valuation techniques used to measure fair value. The fair value hierarchy gives the highest priority to quoted prices (unadjusted) in active markets for identical assets or liabilities (level 1) and the lowest priority to *unobservable inputs* (level 3). According to FASB ASC 820-10-35-41, a quoted price in an active market provides the most

⁴ The explanation in this paragraph is based on paragraph C50 of FASB Statement No. 157, which was not codified in FASB ASC. However, the task force believes that paragraph C50 provides helpful guidance and, therefore, decided to incorporate it in this guide.

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reliable evidence of fair value and should be used without adjustment to measure fair value whenever available, except in circumstances specified in FASB ASC 820-10-35-41C.⁵

1.12 Securities of privately held enterprises, by definition, are not traded in public markets; therefore, quoted prices are generally not available. However, privately held enterprises may sometimes engage in arm's-length⁶ cash transactions with *unrelated parties* for issuances of their equity securities, and under certain conditions, the cash exchanged in such a transaction is an observable input. Those conditions are

- a. the equity securities in the transaction are the same securities as those for which the fair value is being estimated (for example, when both investors and management hold common stock, and the management shares have the same rights as the investor shares without additional postvesting restrictions), and
- b. the transaction is a current transaction between willing parties (that is, other than in a forced or liquidation sale and other than under terms or conditions arising from a previous transaction). (For example, a transaction in which the investors purchase additional shares pursuant to a tranching preferred agreement or when employees exercise employee stock options at a fixed, previously determined price would not satisfy condition [b].)

See chapter 8, "Inferring Value From Transactions in a Private Company's Securities."

1.13 Even when these conditions do not apply, any transactions in the company's equity securities would need to be considered when estimating the fair value of the other equity securities in the company, making adjustments as needed.⁷ For example, if the company has completed a preferred stock financing round within a relevant time period or is scheduled to complete such a financing within the next few months, the valuation of the company's other equity securities would need to

- consider the differences in rights and preferences between the current financing and the company's other equity securities;
- evaluate the changes in the value of the company between the transaction date and valuation date, if any, or the risk associated with a planned transaction if the transaction has not yet closed; and

⁵ FASB ASC 820-10-35-41C specifies certain circumstances when adjustments to level 1 inputs may be appropriate (for example, in valuing large portfolios of similar assets [for example, using matrix pricing] or making adjustments for factors specific to the asset when relying on the quoted price for an asset in estimating the fair value of a liability).

⁶ The meaning of arm's length has varying interpretations in practice. For example, some might consider the sale of preferred stock in a second round of financing to an existing investor a related-party transaction, even if other preferred shares in the same round are sold to new shareholders. A full discussion of this issue is beyond the scope of this chapter, but the reader should be aware that different interpretations of arm's length do exist and should be adequately explored and explained in the valuation report.

Also, FASB ASC 820-10-30-3A(a) provides the following guidance on related party transactions: "[T]he price in a related party transaction may be used as an input into a fair value measurement if the reporting entity has evidence that the transaction was entered into at market terms."

⁷ See chapter 8, "Inferring Value from Transactions in a Private Company's Securities."

- if the transaction is not arm's length, understand the reasons for the differences between the transaction price and fair value of the securities purchased.

See chapter 8.

1.14 If neither quoted market prices in active markets nor arm's length cash transactions in the same class of securities are available, as is most often the case with privately held equity securities, the task force recommends that management engage a valuation specialist for the purpose of assisting management in estimating the fair value of these securities. Estimating the fair value of the privately held equity securities is the responsibility of management. Management bears the responsibility for investigating the qualifications of a valuation specialist (see appendix C, "Criteria for the Selection of a Valuation Specialist"), engaging the valuation specialist, and ensuring that a high-quality valuation is performed and documented in a report. The assumptions used in estimating the fair value of the privately held equity securities, whether prepared by management or the valuation specialist, are the responsibility of management. Management is responsible for understanding and evaluating the conclusions of the valuation report. See appendix D, "Table of Responsibilities of Management and the Valuation Specialist," for a summary of the various responsibilities of management and the valuation specialist that are discussed in detail throughout this guide.

1.15 All valuation techniques applied in a valuation of a privately held enterprise and its securities may be broadly classified into the market, income, or asset approaches.⁸ Each of the three approaches may be applicable in the valuation of privately issued securities, depending largely on the stage of an enterprise's business development. In performing a valuation, a valuation specialist should consider all three approaches and select the approach or approaches that are appropriate under the circumstances.⁹ That selection would include consideration of factors such as the history, nature, and stage of development of the enterprise; the nature of its assets and liabilities; its capital structure; and the availability of reliable, comparable, and verifiable data that will be required to perform the analysis. In some cases, a single valuation technique will be appropriate, whereas in other cases, multiple valuation techniques will be appropriate. See chapter 9, "Relationship Between Fair Value and Stages of Enterprise Development," for a discussion of the relationship between approach selection and the stage of enterprise development.

1.16 It is then up to the valuation specialist's informed judgment to assess the results of the various valuation techniques used and to arrive at the fair value measurement. FASB ASC 820-10-35-24B states that "[i]f multiple valuation techniques are used to measure fair value, the results (that is, respective indications of fair value) shall be evaluated considering the reasonableness of the range of values indicated by those results. A fair value measurement is the point within that range that is most representative of fair value in the circumstances." Therefore, when assessing the results of various valuation techniques, the valuation specialist would need to consider factors such as the

⁸ See footnote 9 in paragraph .11.

⁹ This requirement is consistent with guidance in paragraphs .31–.32 of Statement on Standards for Valuation Services No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100). It is also consistent with guidance in FASB ASC 820-10-35-24.

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relative applicability of the valuation techniques used, given the nature of the industry and current market conditions; the quality, reliability, and verifiability of the data used in each valuation technique; the comparability of public enterprise or transaction data used in the analyses to the subject enterprise; and any additional considerations unique to the subject enterprise.

1.17 For purposes of this guide, a *fairness opinion* does not constitute a fair value estimate, although the analysis used to support the fairness opinion may provide input useful in developing a fair value estimate.

1.18 A best practice is to perform the valuation explicitly for each purpose for which management plans to use the valuation. For example, if management plans to use the common stock valuation both for establishing an option strike price consistent with IRC Section 409A and as an input into estimating the fair value of the options in accordance with FASB ASC 718, the valuation specialist should explicitly consider both purposes and any differences in the valuation required for those purposes. Similarly, if management plans to use the valuation analysis both for estimating the fair value of the common stock in accordance with FASB ASC 718 and estimating the fair value of the preferred stock warrants or other interests in accordance with FASB ASC 820, the valuation specialist should explicitly consider both purposes and any differences in the valuation required for those purposes. Finally, in some cases, investors in the enterprise may rely on an analysis performed for purposes of IRC Section 409A or FASB ASC 718 in estimating the fair value of minority interests in the preferred stock or other securities, as required under FASB ASC 946, *Financial Services—Investment Companies*. Although the valuations required for these various purposes are expected to be generally consistent, it is not appropriate to assume that the valuation performed for one purpose will necessarily be suitable for another purpose.

Chapter 2

Stages of Enterprise Development

2.01 The stage of operational development of an enterprise is an important determinant of the value of the securities within the enterprise and an indicator for which valuation approach or approaches are generally more appropriate. This chapter defines and delineates the stages used in this guide, and chapter 9, "Relationship Between Fair Value and Stages of Enterprise Development," provides additional guidance about the appropriateness of the approaches in the various stages. The stages are defined in subsequent paragraphs in terms of operational development. Typical financing scenarios during those stages are relevant as well, but because different industries may have very different financing patterns (for example, pharmaceutical or biotechnology enterprises versus software enterprises) and because financing patterns may change over time, the stages are defined for purposes of this guide in terms of operational development rather than financing.

2.02 An enterprise typically builds value throughout the various stages of development but generally not in a linear fashion. In valuing the securities within an enterprise, it is important to recognize the enterprise's stage of development and its achievement of developmental milestones. The stage of development will influence the perceived risk of investing in the enterprise, which, in turn, will influence the valuation.

2.03 The typical stages of enterprise development are characterized in the following table.¹

Table 2-1

<i>Stage</i>	<i>Description</i>
1	Enterprise has no product revenue to date and limited expense history and, typically, an incomplete management team with an idea, a plan, and possibly some initial product development. Typically, <i>seed capital</i> , or first-round financing, is provided during this stage by friends and family, <i>angels</i> , or venture capital firms focusing on early-stage enterprises, and the securities issued to those investors are occasionally in the form of common stock but are more commonly in the form of preferred stock.
2	Enterprise has no product revenue but substantive expense history because product development is under way, and business challenges are thought to be understood. Typically, a second or third round of financing occurs during this stage. Typical investors are venture capital firms, which may provide additional management or board of directors' expertise. The typical securities issued to those investors are in the form of preferred stock.

(continued)

¹ The Equity Securities Task Force has chosen to present six stages of development. Other sources may indicate different numbers of stages.

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Stage	Description
3	Enterprise has made significant progress in product development; key development milestones have been met (for example, hiring of a management team); and development is near completion (for example, <i>alpha</i> and <i>beta testing</i>), but generally, there is no product revenue. Typically, later rounds of financing occur during this stage. Typical investors are venture capital firms and strategic business partners. The typical securities issued to those investors are in the form of preferred stock.
4	Enterprise has met additional key development milestones (for example, first customer orders or first revenue shipments) and has some product revenue, but it is still operating at a loss. Typically, <i>mezzanine financing</i> grounds occur during this stage. Also, it is frequently in this stage that discussions would start with investment banks for an initial public offering (IPO). ¹
5	Enterprise has product revenue and has recently achieved breakthrough measures of financial success, such as operating profitability or break-even or positive cash flows. A <i>liquidity event</i> of some sort, such as an IPO or a sale of the enterprise, could occur in this stage. The form of securities issued is typically all common stock, with any outstanding preferred converting to common upon an IPO (and perhaps also upon other liquidity events). ²
6	Enterprise has an established financial history of profitable operations or generation of positive cash flows. Some enterprises may remain private for a substantial period in this stage. ³ An IPO could also occur during this stage. ⁴

¹ The actual stages during which liquidity events occur or discussions with investment bankers for an IPO take place depend upon several factors. Those factors include, for example, the state of the economy, investor sentiment, and the state of the IPO market.

² See table note 1.

³ Almost all venture capital- and private equity-backed companies will ultimately seek liquidity through an IPO or sale of the company. Some enterprises (for example, family-owned or other tightly held enterprises) may intend to remain private indefinitely. Such enterprises typically have simpler capital structures, and their securities may be valued using simpler methodologies. See chapter 5, "Valuation of Equity Securities in Simple Capital Structures."

⁴ See table note 1.

2.04 An enterprise may go through other stages that are not mentioned in table 2-1. Some product development cycles include extensive prototyping during development and may have more than the six stages described in the table. Moreover, not every enterprise will necessarily go through every stage. For example, an enterprise may develop a software product very quickly and proceed directly to production rather than subjecting the product to extensive testing, or an enterprise may remain private for a substantial period in stage 6,

establishing operating and financial stability. Many such enterprises, however, eventually undergo an initial public offering (IPO).

2.05 For purposes of this guide, an IPO is considered a liquidity event for the enterprise. Note, however, that although an IPO can provide liquidity for the enterprise's freely traded shares and also, in most cases, leads to the conversion of the preferred stock (thus resolving the optionality of the common stock), it seldom provides liquidity for all shareholders. As a result, in analyzing assumptions to be made in connection with IPO scenarios, valuation specialists may consider whether it is appropriate to look beyond the IPO to address the share liquidity implications and continued risks and rewards of ownership of the securities covered by their valuation.

Chapter 3

Factors to Be Considered in Performing a Valuation

3.01 This chapter describes the factors to be considered in performing a valuation of the securities within a privately held enterprise. In general, a valuation specialist typically considers all the factors listed in this chapter, irrespective of the valuation approach(es) selected.

3.02 *Milestones achieved by the enterprise.* Many early-stage enterprises have a well-developed business plan that sets forth the business strategy, the product, the market, the competition, and a projected financing and operating schedule. Few investors are willing to commit funds in advance sufficient to carry the firm from concept to public offering. Rather, they want to see that the enterprise's management has a sound plan, is executing its plan, and is meeting its commitments. As a result, several financing rounds usually are necessary, with each round contingent on the enterprise having met its prior commitments. Those commitments often are set forth in the original business plan as a series of milestones.

3.03 Enterprise milestones typically include the following:

- Finalize the original business plan.
- Obtain an initial round of financing other than from family and friends. This provides evidence that one or more outsiders are favorably disposed to the enterprise, its management, and its plans.
- Achieve proof of concept, which is often evidenced by alpha testing of a working model or prototype, website, or product or service.
- Beta test the product or service. At this point, the enterprise may begin to receive some cash inflows, demonstrating that customers are willing to buy the enterprise's product or service.
- Successfully assemble the management team.
- Establish an ongoing, stable relationship with strategic partners.
- Obtain a sufficient base of customers to support ongoing operations, or obtain a key customer.
- Obtain regulatory approval (for example, U.S. Food and Drug Administration [FDA] approval of a pharmaceutical enterprise's new drug).
- Develop a manufacturing plan.
- Secure key raw materials, equipment, or work force.
- Execute contracts with customers.
- Deliver the product or service to customers.
- Achieve positive cash flows, or at least break-even operations.
- Achieve profitability.

3.04 In general, as each milestone is met, the value of the enterprise and the securities within the enterprise are enhanced. As the number of remaining milestones and the related time frame for achieving the business plan are reduced, uncertainty about achieving the original business plan declines. As

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uncertainty is reduced, investors perceive that there is less risk, which, in turn, reduces their *required rate of return*, which increases the value of the enterprise and its securities. Typically, later-stage milestones result in higher increases in value than early-stage milestones; that is, proportionately higher value enhancement occurs in later stages as perceived risk decreases during those stages.¹ (See paragraph 3.18.)

3.05 *State of the industry and economy.* The valuation of an enterprise and its securities generally will be affected by the current state of the industry in which the enterprise competes. Further, local, national, and global economic conditions also affect *enterprise values*, albeit not always in the same direction; some enterprises may be helped by poor economic conditions (for example, discount retailers versus high-end retailers). Typically, however, enterprise values are enhanced for an enterprise in a growing, profitable industry and diminished in the alternative. Similarly, overall favorable economic conditions typically enhance value because, in general, they indicate higher rates of growth in sales and profits, whereas in a recessionary period, values tend to be diminished. For many early-stage companies, however, economic or industry conditions are not directly relevant because many early-stage enterprises are years away from commercialization of their particular product or service. More important for valuing the securities within these early-stage companies is the investment environment for raising capital or engaging in initial public offerings.

3.06 *Members of management and board of directors.* The experience and competence of the top management team and board of directors are important considerations in estimating value. Past performance of the individuals typically is used as an indicator of future performance. During the later stages of enterprise development, venture capital investors often bring in additional experienced managers, and this tends to reduce perceived risk.

3.07 *Marketplace and major competitors.* The less competitive a particular marketplace, the greater the potential for capturing a high market share and, thus, the higher a valuation will tend to be. Actual or potential market share is, in and of itself, a factor in estimating valuation. In some but not all instances, an enterprise's being first to market with a particular product or service has a favorable effect upon enterprise value. Conversely, if another entity has already achieved a "critical mass" by capturing a significant market share, that level of competition may adversely affect enterprise value.

3.08 *Barriers to entry.* Significant barriers to entry, such as product licensing requirements or FDA approval, tend to preclude competition and may enhance the value of already established enterprises. For an early-stage enterprise that has not yet overcome such barriers, however, enterprise value tends to be less because of the risks associated with trying to meet requirements such as those associated with licensing or regulatory approval. Other potential barriers can include significant capital expenditures and long development lead times relative to the perceived longevity of the market opportunity.

¹ Note that the list of milestones in paragraph 3.03 is not intended to be comprehensive nor do all companies complete these milestones in exactly the same sequence. In addition, some milestones may take significantly longer to achieve than others, and in some cases, the process may be iterative, meaning progress made toward one milestone facilitates progress toward another. For example, assembling the management team may occur in several stages: as the technical development progresses, the manufacturing and logistics team is developed, and the sales and marketing team is assembled.

3.09 *Competitive forces.* Five competitive forces are often cited that many consider as embodying the rules of competition that estimate the attractiveness of an industry. The forces are potential competition, substitute products, buyers' bargaining power, suppliers' bargaining power, and current competition.² Industry profitability is influenced by these five forces because they influence the prices, costs, and required investments of enterprises in an industry. Early-stage enterprises in less mature markets typically are affected to a lesser extent by these forces, and the forces become more relevant as an enterprise progresses through its life cycle.

3.10 *Existence of proprietary technology, product, or service.* Proprietary technology (as typically evidenced by patents or patent applications), exclusive licensing arrangements, and enterprise-owned intellectual property tend to enhance the value of an enterprise.

3.11 *Work force and work force skills.* The quality of its work force may affect an enterprise's value. Considerations include, for example, the union versus nonunion makeup of the work force, the rate of employee turnover, the specialized knowledge or skills of key employees or groups of employees, and the overall employee benefit programs and policies. Many perceive that enterprises with good human relations programs tend to be more profitable because of expected greater employee commitment and lower turnover. The existence of an employee stock option plan in industries in which such plans are common is also perceived as a factor in enhancing employee commitment and reducing turnover.

3.12 *Customer and vendor characteristics.* Certain characteristics of an enterprise's customers and vendors may affect the enterprise's value. Considerations include, for example, the number of customers and vendors, the financial health and profitability of customers and vendors, and the strength and stability of the industries in which those customers and vendors operate.

3.13 *Strategic relationships with major suppliers or customers.* A close relationship with a *related party*, such as a supplier or a customer relationship with a parent or an entity under common ownership or *control*, or a close relationship with an entity such as another investee of venture capital investors in the enterprise, may affect valuation. In some cases (for example, those in which an enterprise has a relationship with a strong financial backer), the enterprise's value may be enhanced. Having a well-known and well-respected customer is considered by many to be an indication that the enterprise has overcome an initial marketing hurdle and may positively affect valuation. However, it may also be the case that a close relationship negatively affects value (for example, if investors perceive that a "too close" relationship exists [such as one in which a disproportionate amount of control or influence is held over the enterprise] or if the company's revenues are dependent on short-duration contracts with only a few large customers).

3.14 Indicators of close relationships with other entities include the following:

- Significant interentity transactions conducted other than at arm's length

² Michael E. Porter, *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York: The Free Press, 1998).

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- Sharing of technology, processes, or intangible assets
- Joint ventures or similar arrangements between the entities
- Arrangements to jointly develop, produce, market, or provide products or services
- Significant interentity purchases or sales of assets (other than the entities' products and services)
- One entity being an equity method investee of the other
- Significant transfers of investments between entities
- One entity holding disproportionate rights, exclusive rights, or rights of first refusal to purchase or otherwise acquire direct ownership interests, assets, technology, products, or services of the other entity

3.15 *Major investors in the enterprise.* Some believe that the value of an enterprise is not affected by its investor base and that forecasted revenue and expenses, cash flows, and income all need to be independent of the identity of such investors (or investor groups). Nonetheless, other investors may have a perception that the enterprise has less risk if it is backed by well-known investors who may have influenced the selection or development of management teams or strategic planning at a company. In turn, this perceived reduced risk may result in a higher value for the enterprise.

3.16 *Cost structure and financial condition.* A valuation specialist would need to evaluate an enterprise's cost structure in terms of the enterprise's cost flexibility and level of committed expenses. The relationship between fixed and variable costs, for example, may shed light on flexibility. The other relevant indicators of financial flexibility would include the company's ability to react quickly to rapid changes in demand for its products or services and the sensitivity of the company's cost structure to changes in input costs relative to the ability to pass those costs along to customers. The financial condition of an enterprise is affected by factors such as the enterprise's stage of development, the financial strength of the enterprise's investors, and the current *burn rate*. The nearer an enterprise is to "cash burnout," the higher the financing risk and the lower the valuation will tend to be. A condition of nearness to burnout does not necessarily indicate a liquidation situation or the absence of a willing buyer, but in some circumstances, a company may have to liquidate without a buyer, and the valuation specialist would also need to take that into account. An enterprise with a need to have successive rounds of financing to fund operations will tend to have a higher financing risk than an enterprise that has raised all the needed capital in a single transaction.

3.17 *Attractiveness of industry segment.* The valuation of an enterprise may be affected by how investors perceive the attractiveness of the industry segment in the equity markets. That perception affects the enterprise's ability to raise capital. The more attractive the industry segment in the equity markets, the higher the valuation will tend to be.

3.18 *Risk factors faced by the enterprise.* Every enterprise faces numerous risks, some of which are faced principally by early-stage enterprises. In evaluating risk factors, it is recommended that a valuation specialist examine an enterprise's operating, regulatory, financing, and economic risks. A valuation specialist may make appropriate inquiries of management and may also find it useful to review public documents of other enterprises in the same or similar

industries in order to identify areas of potential concern. A valuation specialist may find the following table of risk factors useful.³

Table 3-1

<i>Risk Factor</i>	<i>Higher Risk</i>	<i>Lower Risk</i>
Economy	Subject to uncertainty	Relatively stable
Industry		
• General industry conditions	Emerging or unstable; high rate of business failure	Mature or relatively stable
• Activities by lobbyists or consumer groups	Active opposition	Relative absence of opposition activities
• Environmental issues	Potential environmental concerns	
Enterprise		
• Story, concept, business plan	Undeveloped	Developed and of high quality
• Operating history	Little or no operating history	Seasoned enterprise; relatively stable operating history
• Achievement of plan and milestones	Plan and milestones not achieved in timely fashion	Plan and milestones achieved in timely fashion
• Customer base	Concentrated customer base	Diverse, relatively stable customer base
• Financial condition	Weak financial condition; poor operating results; near-term financing risk concerns or overleveraged capital structure	Strong financial condition; good operating results

(continued)

³ The risk factors in table 3-1 are similar to the matters to consider when evaluating whether sufficiently objective assumptions can be developed, which are listed in exhibit 7-1, "Sufficiently Objective Assumptions—Matters to Consider," of chapter 7, "Reasonably Objective Basis," of the AICPA Guide *Prospective Financial Information*. The factors, although similar, are used for different purposes, and there is no intended direct relationship between the two bodies of literature.

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<i>Risk Factor</i>	<i>Higher Risk</i>	<i>Lower Risk</i>
<ul style="list-style-type: none"> Location of operations 	Countries with political, economic, or other instabilities; volatile currency	Stable countries; stable currencies.
<ul style="list-style-type: none"> Exposure to litigation 	High exposure	Low exposure
Management's experience with		
<ul style="list-style-type: none"> Industry 	Inexperienced management	Experienced management
<ul style="list-style-type: none"> The enterprise, its products or services, and its stage of development 	Inexperienced management; high turnover of key personnel	Experienced management
Board of directors' experience with		
<ul style="list-style-type: none"> Industry 	Inexperienced board	Experienced board
<ul style="list-style-type: none"> The enterprise, its products or services, and its stage of development 	Inexperienced board	Experienced board
Products or services		
<ul style="list-style-type: none"> Market 	New or uncertain market; highly competitive market; low barriers to entry	Existing or relatively stable market; unique product or service, relatively few established competitors; significant barriers to entry that the enterprise has overcome
<ul style="list-style-type: none"> Technology 	Rapidly changing technology and high likelihood of product obsolescence; enterprise does not have proprietary technology	Relatively stable technology and low likelihood of product obsolescence; enterprise has proprietary technology
<ul style="list-style-type: none"> Experience 	New products or expanding product line	Relatively stable products

3.19 Qualitative and quantitative factors. No "rules of thumb" or universal formulas can reliably be used to estimate the value of an enterprise. As indicated in paragraph .39 of Statement on Standards for Valuation Services

(SSVS) No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100), a "rule of thumb" is typically a reasonableness check against other methods used and should generally not be used as the only method to estimate the value of the subject interest. If more than one valuation technique is used, as is often the case, the valuation specialist would need to assess the relevance and quality of the data used in each, as well as the various value indications. Each valuation is unique, and a final estimate of value based on an assessment of differing values obtained under the various valuation techniques requires the use of professional judgment. That judgment involves consideration of factors such as the relative applicability of the valuation techniques used, given the nature of the industry and current market conditions; the quality, reliability, and verifiability of the data used in each valuation technique; the comparability of public enterprise or transaction data used in the analyses to the subject enterprise; and any additional considerations unique to the subject enterprise that would be considered by market participants. Readers might also find it helpful to refer to paragraph .42 of SSVS No. 1, which provides guidance on conclusion of value.

Chapter 4

Overview of Valuation Approaches

4.01 As indicated in paragraph .04 of Statement on Standards for Valuation Services (SSVS) No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100), in the process of estimating value, the valuation specialist applies valuation approaches and valuation methods and uses professional judgment. The use of professional judgment is an essential component of estimating value. Also, it is important for the valuation specialist to consider facts and circumstances specific to the securities being valued.

4.02 The three approaches to estimating value for an enterprise and its securities are the market, income, and asset approaches.¹ Although many valuation techniques are used in practice, all such valuation techniques fall under one of the three approaches. This chapter discusses in detail the three approaches and the significant assumptions that have the most effect on, and relevance to, each approach.

4.03 Valuation specialists generally apply more than one valuation technique in estimating the value of an enterprise and its securities.² Because estimating value is not an exact science, value indications from different techniques will not necessarily reconcile, but the results of one valuation technique can be used to corroborate, or can otherwise be used in conjunction with, the results of one or more other valuation techniques in estimating value. If a valuation specialist has applied multiple valuation techniques, and one result is significantly different from the other(s), the valuation specialist would need to assess the reasons for the differences. When there are significant differences, it is recommended that the valuation specialist review and revisit the valuation techniques, the assumptions underlying the valuation techniques, and any calculations. If one or more of the three valuation approaches discussed in this chapter is not used, many professional standards require the valuation specialist to communicate in the valuation report the reason why a certain approach was not used.³ The valuation specialist should make this communication even if this guide indicates that a certain valuation approach may not be appropriate in certain situations or that a certain valuation approach may be more appropriate than another approach in certain situations. The

¹ See footnote 9 in paragraph .11.

² For purposes of this guide, *enterprise value* is defined as the value of equity plus interest-bearing debt. In broader valuation practice, the term *enterprise value* is sometimes used to refer to the value of equity, plus interest-bearing debt, less all cash and equivalents; however, for this guide, the Equity Securities Task Force (task force) defines *enterprise value* to include cash and cash equivalents. For purposes of this guide, *equity value* is defined as the enterprise value less the fair value of debt, measured considering the investors' risk-adjusted expected returns from their investment.

³ Under Statement on Standards for Valuation Services (SSVS) No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100), and the Appraisal Foundation's *Uniform Standards of Professional Appraisal Practice*, a valuation specialist should consider all three approaches (market, income, and asset), and if one or more is not used, then the valuation specialist should explain such nonuse. Under Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 820-10-35-24, a reporting entity should use valuation techniques that are appropriate in the circumstances and for which sufficient data are available to measure fair value, maximizing the use of relevant observable inputs and minimizing the use of unobservable inputs. FASB ASC 820-10-35-24B indicates that, in some cases, a single valuation technique will be appropriate, but in other cases, multiple valuation techniques will be appropriate.

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valuation approaches and techniques considered and the reasons for the valuation approaches and techniques chosen are important communications in the performance of a valuation.

4.04 As noted in the previous paragraph, the guidance in this guide includes recommendations about certain valuation approaches and techniques being more or less appropriate in certain situations. It is important to interpret all such recommendations within the context of current, relevant, and appropriate valuation standards, such as SSVS No. 1, which is discussed further in chapter 13, "Elements and Attributes of a Valuation Report," or the Appraisal Foundation's *Uniform Standards of Professional Appraisal Practice*.

Market Approach

4.05 According to the Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) glossary, the *market approach*⁴ is a valuation technique that uses prices and other relevant information generated by market transactions involving identical or comparable (that is, similar) assets, liabilities, or a group of assets and liabilities, such as a business. The market approach bases the value measurement on what other similar enterprises or comparable transactions indicate the value to be. Under this approach, the valuation specialist examines investments by unrelated parties⁵ in comparable equity securities of the subject enterprise or examines transactions in comparable equity securities of comparable enterprises. Financial and nonfinancial metrics (see paragraphs 4.09 and 4.11) may be used in conjunction with the market approach to estimate the fair value of the privately issued securities of the subject enterprise.

4.06 Two commonly used valuation methods for valuing an enterprise within the market approach are the *guideline public company method* and the *guideline company transactions method* (the results of which may require adjustment, especially when valuing an early-stage enterprise, in view of the lack of exact comparables; see paragraphs 4.14–.15 and 4.21–.22).

4.07 Another method for valuing an enterprise within the market approach, the *backsolve method*, derives the implied equity value for the company from a transaction involving the company's own securities⁶ (the results of which may require adjustment for the nature of the securities or any unstated benefits derived; see paragraphs 4.16–.18 and 8.03).

4.08 The market approach may also be used to value the securities within an enterprise directly, based on transactions in the company's own securities. See chapter 8, "Inferring Value From Transactions in a Private Company's Securities."

⁴ The *International Glossary of Business Valuation Terms*, which has been adopted by a number of professional societies and organizations, including the AICPA, and is included in appendix B of SSVS No. 1, defines *market approach* as a "general way of determining a value indication of a business, business ownership interest, security, or intangible asset by using one or more methods that compare the subject to similar businesses, business ownership interests, securities, or intangible assets that have been sold." It is also referred to as market-based approach.

⁵ See footnote 6 in paragraph 1.12.

⁶ The backsolve method requires considering the rights and preferences of each class of equity and solving for the total equity value that is consistent with a recent transaction in the company's own securities, considering the rights and preferences of each class of equity. See chapter 6, "Valuation of Equity Securities in Complex Capital Structures," for a comprehensive discussion of how to value equity securities within a complex capital structure.

4.09 If comparable enterprises are available, valuation specialists may use financial statement metrics (also referred to as financial metrics), such as the following:

- Market value of equity (MVE) to net income
- MVE to book value of equity
- Enterprise value (excluding cash)⁷ to *earnings before interest and taxes (EBIT)*
- Enterprise value (excluding cash) to *earnings before interest, taxes, depreciation, and amortization (EBITDA)*
- Enterprise value (excluding cash) to revenues
- Enterprise value (excluding cash) to debt-free cash flow
- Enterprise value (excluding cash) to book value of assets

4.10 When calculating multiples, equity market values are typically paired with equity-based financial metrics (net income and book value of equity), and *market value of invested capital (MVIC)* multiples are typically paired with invested capital-based financial metrics (revenues, EBIT, and so on). The valuation specialist would need to select the financial metrics that are applicable to the enterprise valuation, given the enterprise's stage of development, industry, growth, profitability, and other relevant factors.

4.11 Nonfinancial statement metrics (also referred to as nonfinancial metrics), sometimes used by industry and analysts, also may be used by valuation specialists and include, for example

- price per subscriber in the cable industry.
- price per bed in the hospital industry.
- enterprise value (excluding cash) to research and development investment in the biopharmaceuticals industry.
- other industry-specific metrics.

4.12 A nonfinancial metric is often industry specific and would ordinarily be used by a valuation specialist when the nonfinancial metric is generally accepted in the industry and would be considered by the market participants. In addition, with many early-stage enterprises, some traditional metrics cannot be used because the enterprises have not yet earned a profit; therefore, nonfinancial metrics may be used in conjunction with the limited number of usable financial metrics. The Equity Securities Task Force (task force) observes that when using these metrics, it is important to corroborate with other methodologies.

4.13 Suppose, for example, that a valuation specialist uses metrics of MVIC to sales and MVIC to EBITDA in conjunction with a delivery service business, whereby the metrics were developed from a group of comparable

⁷ It should be noted that external data sources may already exclude cash in their calculation of enterprise value, in which case the adjustment may not be necessary. However, as noted in the glossary, for purposes of this guide, *enterprise value* is defined to include cash and cash equivalents. Because the amount of nonoperating cash may not be comparable across otherwise similar businesses, it is appropriate to estimate multiples using the comparable enterprise values, excluding cash; to multiply by the metrics of the company to be valued; and then to add back the company's nonoperating cash.

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businesses. If MVIC to sales is 0.40, and MVIC to EBITDA is 4.0 for the comparable businesses, and if the two metrics are applied to the subject enterprise's results, different valuations may result, say \$7 million versus \$8 million, respectively. If the valuations differ in this way, the valuation specialist often will give greater weight to one measure instead of the other because one is believed to be more reflective of fair value. Asset-based, sales-based, and income-based metrics that have proven useful in the past are typically more accepted in practice than alternative metrics that may not be as widely used. The correlation between the observed prices and metrics might also be considered in estimating the weight to apply to each measure.

4.14 A significant limitation of the guideline public company and guideline company transactions methods is that "true" comparables are unlikely to exist, particularly in valuing privately held, early-stage enterprises. Another limitation arises if the enterprise being valued has no earnings or has immaterial revenue because forecasts of financial statement amounts may then be highly speculative. This limitation is particularly apparent for enterprises in stages 1 and 2. (See table 2-1 for more information on different stages of development.) Even if a market approach is appropriate, if the comparables are publicly held enterprises, the performance indicators from public enterprises may be difficult to apply directly to privately held enterprises because the public enterprises are typically further along in their development. See paragraphs 4.21–.22.

4.15 If comparables are used, the valuation specialist should identify and describe the selected comparable enterprises and the process followed in their selection. In addition, the valuation specialist should disclose in the valuation report the applicable metrics selected for use in the valuation and the rationale for their selection.

4.16 A valuation specialist also may use the backsolve method to solve for the implied equity value that is consistent with a recent transaction in the company's own securities. The basis for application of this method is transactions in equity securities of the enterprise with unrelated investors or among unrelated investors themselves. In using this method, the valuation specialist should disclose in the valuation report the rationale for selecting the transactions deemed relevant (and for excluding other transactions, if any) and what adjustments were used in estimating fair value. In selecting the relevant transactions, the valuation specialist should consider whether those transactions involve any stated or unstated rights or privileges, any effects of which would ordinarily be factored out of any fair value estimate. See chapter 8.

4.17 In applying the backsolve method, a valuation specialist should consider any events that were known or knowable as of the valuation date, including significant value-creating milestones, that could affect the value of the enterprise and that have occurred since the latest financing round (or that are expected to occur prior to the next financing round, if the next financing round is pending).

4.18 In addition, even if the most recent transactions were not arm's length, any recent or pending transactions in the company's equity securities would need to be considered when estimating the fair value of the other equity securities in the company, making adjustments as needed. For example, if the company has completed a preferred stock financing round within the previous year or is in substantive negotiations to complete such a financing soon after

the valuation date, the valuation of the company's other equity securities would need to

- consider the differences in rights and preferences between the current financing and the company's other equity securities;
- evaluate the changes in the value of the company between the transaction date and valuation date⁸ or the risk associated with a planned transaction if the transaction has not yet closed; and
- if the transaction is not arm's length, provide an explanation for the differences between the transaction price and fair value of the securities purchased.⁹

4.19 Prices observed in issuances of securities by comparable private companies (if available) may not be appropriate as market comparables without adjustment if those transactions involve *synergies* that are specific to a particular buyer-seller relationship. Prices paid for privately issued securities by major suppliers, customers, or licensing or co-marketing partners may not be appropriate as market comparables without adjustment because such transactions may involve the granting of certain rights or privileges to the supplier, customer, or partner. If that transaction reflects any significant consideration for strategic or synergistic benefits in excess of those expected to be realized by market participants, but these buyer-specific synergies would not be expected to be available in the exit market for the minority interest to be valued, the valuation specialist ordinarily would identify those excess benefits and remove them from the valuation. It would be appropriate to consider future synergies in valuing the enterprise only to the extent that market participants purchasing a minority interest would expect the enterprise to realize a synergistic premium at exit (for example, if multiple strategic buyers would be expected to bid up the price). See chapter 7, "Control and Marketability."

4.20 Financing rounds that are senior to previous rounds may not provide a good indication of the equity value for the enterprise because they may result in models that do not appropriately capture the *liquidation preferences* for the junior preferred securities. In these cases, one approach may be to adjust the transaction price, applying a slight premium to the price paid for the senior preferred due to the negotiation dynamics, before solving for the overall equity value. Another approach would be to perform a valuation of the equity based on other methods and then evaluate the difference between the model values and transaction price. These approaches would avoid assigning little to no value to the liquidation preferences for the junior rounds and result in a more realistic

⁸ If the company is in negotiations for a financing that is expected to be completed soon after the valuation date, the valuation specialist should consider the information that is known or knowable as of the valuation date and the reliability of that information.

⁹ For example, some preferred investments are structured as "tranching" investments, in which the investors agree to put in a portion of the investment initially and the rest at a later date if certain milestones are met. Typically, both tranches are for the same class of preferred stock and have the same price per share. However, because in most cases, the preferred stock would be expected to increase in value if the milestones are met, the initial investment typically reflects a premium to the value on the investment date (including both the preferred stock itself and the right to buy more at a discount later), and the later investment is at a discount to the value. Note, however, that several different types of contracts follow this basic pattern, and different structures have different implications for the valuation. The valuation specialist should consider the details of the contracts in valuing these structures.

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estimate of the total equity value. Other approaches that appropriately consider the liquidation preferences for the junior rounds may also be appropriate. See paragraphs I.65–.69 for an example showing one approach for modeling the value of the securities when considering a recent senior financing round.

Significant Assumptions of the Market Approach

4.21 The key assumption of the market approach is that the selected comparable enterprise or transaction is "truly" comparable. As noted previously, however, typically, there are few truly comparable enterprises. In order to achieve comparability, the valuation specialist may need to make adjustments to select appropriate multiples based on a comparison to an enterprise that, in one significant respect or another, is not comparable to the enterprise being valued. Typically, such adjustments relate to factors such as differences in entity size, profitability, expected growth,¹⁰ working capital, liquidity, and investors' required rate of return, given the risk of the investment.¹¹

4.22 In performing valuations of early-stage enterprises under the market approach, not only is it assumed that the industry, size of enterprise, marketability of the products or services, and management teams are comparable but also that the enterprise's stage of development is comparable. This last assumption often renders the market approach impractical for early-stage enterprises because pricing data for such enterprises is difficult, if not impossible, to find. Furthermore, even if pricing data can be found, until product or service feasibility is achieved, comparability among early-stage enterprises is difficult to achieve.

Income Approach

4.23 According to the FASB ASC glossary, the *income approach*¹² is defined as "[v]aluation techniques that convert future amounts (for example, cash flows or income and expenses) to a single current (that is, discounted) amount." The fair value measurement is estimated on the basis of the value indicated by current market expectations about those future amounts. The income approach obtains its conceptual support from its basic assumption that value emanates from expectations of future income and cash flows.

¹⁰ For most venture capital-backed and private equity-backed companies, projected revenue and earnings growth exceed industry levels. Thus, even though the values of these companies typically reflect lower than average multiples of projected revenues or earnings, these same values also may reflect average or above average multiples of current revenues and earnings. For example, an early-stage company may have almost no current revenue, whereas a large private equity-backed company in a turnaround situation may have low earnings that are expected to improve under new management. In both of these examples, the value of the companies would reflect a high current multiple (escalating rapidly as revenues or earnings before interest, taxes, depreciation, and amortization [EBITDA] approach zero).

¹¹ Another consideration is that not all companies within an industry have similar operations. For example, some hotel companies purchase their properties, whereas others lease them. Companies with different operating models will likely trade at different multiples of various financial metrics, so it is important to consider these factors when estimating appropriate multiples for the company to be valued. It may also be necessary to make pro forma adjustments to the financial statements for selected comparable companies or for the company to be valued to take into account factors such as favorable or unfavorable contracts (for example, a below-market lease or a low rate on a technology licensing agreement), recent or pending acquisitions, or one-time events.

¹² The *International Glossary of Business Valuation Terms* defines *income approach* as a "general way of determining a value indication of a business, business ownership interest, security, or intangible asset using one or more methods that convert anticipated economic benefits into a present single amount." It is also referred to as income-based approach.

4.24 The income approach may be used to estimate the fair value of the asset being valued (in this case, the equity securities of privately held enterprises). Whereas the market approach is based on market data which may need to be adjusted for any differences between the selected comparable and the interest to be valued, the income approach is often based on unobservable inputs. As stated in FASB ASC 820-10-35-54A, "A reporting entity shall develop unobservable inputs using the best information available in the circumstances, which might include the reporting entity's own data. In developing unobservable inputs, a reporting entity may begin with its own data, but it shall adjust those data if reasonably available information indicates that other market participants would use different data or there is something particular to the reporting entity that is not available to other market participants." In particular, when valuing the securities within a privately held enterprise, it is appropriate to consider the cash flows that market participants would expect the enterprise to generate under current ownership through the anticipated liquidity event. See paragraphs 5.02–.04 and 5.08.

4.25 The valuation technique commonly used in applying the income approach to value a minority interest in privately issued securities is the *discounted cash flow (DCF) method*. The DCF method requires estimation of future economic benefits and the application of an appropriate *discount rate* to equate them to a single present value. The future economic benefits to be discounted are generally a stream of periodic cash flows attributable to the asset being valued,¹³ but they could also take other forms under specific circumstances (for example, a lump sum payment at a particular time in the future without any interim cash flows).

4.26 There are many considerations in applying the income approach. One consideration is the issue of how risk is assessed and assigned. Under the *discount rate adjustment technique*, which is discussed in paragraphs 10–12 of FASB ASC 820-10-55, risk is assigned to, or incorporated into, the discount rate.¹⁴ The discount rate adjustment technique uses a single set of cash flows from the range of possible estimated amounts, whether contractual or promised or most likely cash flows. In all cases, those cash flows are conditional upon the occurrence of specified events. Those conditional cash flows are then discounted to present value using a risk-adjusted rate of return, or discount rate. The greater the perceived risk associated with the cash flows, the higher the discount rate applied to them and the lower their present value.¹⁵

¹³ The asset being valued could be a single asset, a collection of assets, or an entire enterprise.

¹⁴ Typically, a discounted cash flow (DCF) method uses after-tax cash flows and employs an after-tax discount rate. The use of pretax cash flows generally is inconsistent with how value ordinarily is measured in a DCF method. In any case, the cash flows and discount rate used (after-tax or pretax) should be consistent (that is, pretax cash flows should not be used with after-tax discount rates and vice versa).

¹⁵ Note that for early-stage companies, management's estimates of an enterprise's cash flows are often contingent on the success of the enterprise, reflecting a scenario in which the enterprise achieves the planned technical breakthroughs and executes on its business plan. Therefore, the discount rates used for these contingent cash flows are often quite high. In this case, the valuation specialist should work with management to understand the cash flows and ensure that they are reasonable and to select a discount rate consistent with the risk in the cash flows. Regardless of whether fair value measurements are developed by management or a third-party valuation specialist, management is responsible for the measurements that are used to prepare the financial statements and for underlying assumptions used in developing those measurements.

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4.27 Another technique that falls under the income approach is the *expected present value technique*. As discussed in FASB ASC 820-10-55-13, this technique uses as a starting point a set of cash flows that represents the probability-weighted average of all possible future cash flows (that is, the *expected cash flows*). The resulting estimate is identical to *expected value*, which, in statistical terms, is the weighted average of a discrete random variable's possible values with the respective probabilities as the weights. Because all possible cash flows are probability weighted, the resulting expected cash flow is not conditional upon the occurrence of any specified event (unlike the cash flows used in the discount rate adjustment technique). However, as indicated in FASB ASC 820-10-55-18, to apply the expected present value technique, it is not always necessary to take into account distributions of all possible cash flows using complex models and techniques. Rather, it might be possible to develop a limited number of discrete scenarios and probabilities that capture the array of possible cash flows.

4.28 The expected present value technique has two variations:

- In method 1, the probability-weighted expected cash flows are first adjusted for systematic (market) risk by subtracting a cash risk premium (that is, risk-adjusted expected cash flows). Those risk-adjusted expected cash flows represent a certainty-equivalent cash flow, which is discounted at the risk-free interest rate. A certainty-equivalent cash flow refers to a probability-weighted expected cash flow adjusted for risk so that a market participant would be indifferent to trading the certain cash flows for the risky probability-weighted expected cash flows. The Black-Scholes model is an example of this method; risk-neutral simulation techniques and lattice models are other examples. In practice, the task force believes it is impractical to directly assess the certainty-equivalent cash flows for an enterprise or its equity securities, so aside from Black-Scholes and other techniques that use a risk-neutral framework, method 1 is rarely used.
- In method 2, the probability-weighted expected cash flows are adjusted for systematic (market) risk by applying a risk premium to the risk-free interest rate. Accordingly, the cash flows are discounted at a risk-adjusted rate of return that corresponds to an expected rate associated with these probability-weighted cash flows (that is, an expected rate of return).¹⁶ Models used for pricing risky assets, such as the *capital asset pricing model*, can be used to estimate the expected rate of return. As in the discount rate adjustment technique, the greater the perceived risk associated with the expected cash flows, the higher the discount rate associated with it. Because in this method all possible cash flows are probability weighted, the resulting expected cash flow is not conditional upon the occurrence of any specified event, unlike the cash flows used in the discount rate adjustment technique. Thus, the overall discount rates used in discounting probability-weighted cash flows are often lower than those used in discounting single best estimate (success) cash flows, all else being equal. Note, however, that probability-weighted cash flows are not the same as

¹⁶ The probability-weighted expected return method discussed in chapter 6 is an example of this method.

certainty-equivalent cash flows, and the discount rate used would still be significantly higher than the risk-free rate.¹⁷

4.29 It is important to note that FASB ASC 820, *Fair Value Measurement*, does not limit the use of present value techniques to measure fair value to these three choices. Many elements of risk may be handled by adjusting either the level of expected cash flows or the discount rate or both.

4.30 The reasoning process behind this technique has been extended into other areas, discussed in paragraphs 4.37–.38, that are known as real options or contingent claims analysis.

4.31 In applying many of the techniques that fall under the income approach, a challenge exists in addressing the final cash flow amount, or *terminal value*. Forecasting future cash flows involves uncertainty, and the farther the forecast goes into the future, the greater the uncertainty of the forecasted amounts. Because discounting attributes less value to cash flows the farther in the future they are expected to occur, there is a point in time beyond which forecasted cash flows are no longer meaningful. For start-up enterprises with little or no operating history, forecasts beyond one or two years are likely to be speculative and unreliable. Nevertheless, the terminal value is often a significant component of the total enterprise value and the value of the securities within that enterprise, and it should be carefully considered. See chapter 9, "Relationship Between Fair Value and Stages of Enterprise Development," for a discussion regarding the reliability of using the income approach for companies at various stages of development.

4.32 Although it may be difficult to forecast future cash flows beyond a certain point, it does not mean that the enterprise will not have such cash flows. Those flows also will be periodic flows unless the ownership of the enterprise is changed or transferred as a result of a liquidity event. In many cases, such an event will result in a single cash flow, which represents the value of the enterprise expected to be realized at that point in time. In other cases, the liquidity event may result in multiple future cash flows, which need to be discounted to estimate terminal value. In all cases, the terminal value should be estimated and incorporated into the DCF calculation of value.

4.33 The cash flows for the enterprise as a going concern also provide a basis for reasonably estimating a terminal value. That estimate generally is made as of the date the enterprise is expected to begin a period of stable cash flow generation. That period may be one of growth at some assumed constant rate or one of no growth. See appendix E, "Table of Capitalization Multiples," for a discussion of capitalization multiples that may be applied to the stable annual cash flow in estimating a terminal value. Whether terminal value is estimated by the use of a capitalization multiple or other means, the terminal value is the valuation specialist's best estimate of the present value of those future cash flows. That terminal value is incorporated into the DCF calculation of value by further discounting the terminal value to a present value.

¹⁷ The venture capital and private equity portfolio rates of return described in paragraph B.01 may provide an indication of the discount rates that may be appropriate for valuing an enterprise using probability-weighted cash flows. However, keep in mind that venture capital and private equity portfolio rates of return reflect a return considering the diversifiable risk across the entire portfolio. To the extent that an investment in a specific company has additional nondiversifiable risk or financing risk, the discount rate for expected cash flows should be higher than the portfolio rate of return.

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4.34 Finally, even if the valuation specialist is unable to reasonably estimate future cash flows beyond a certain date, the valuation specialist still should estimate a terminal value using acceptable valuation techniques.¹⁸ That terminal value should be incorporated into the DCF calculation of value, as discussed in paragraph 4.33.

4.35 Another consideration in applying the income approach is the basis of the valuation (that is, whether the resulting enterprise or security value would be considered controlling or minority and whether it would be considered marketable or nonmarketable). See chapter 7.

4.36 Some valuation specialists use valuation techniques that split an enterprise's economic benefit streams into two or more flows and then discount each at a different rate of return. This technique may be appropriate, for example, in the case of an enterprise that has a commercially viable product being sold in the marketplace but that also has a new product under development that has not yet achieved commercial feasibility. Often, the economic results of different product lines can be readily separated and the riskiness of each separately assessed. The assessment following such separation is similar to the investment analysis performed by financial analysts using the disaggregated segment data of diversified enterprises.

4.37 In recent years, real options theory has been applied by some in the valuation of enterprises. In essence, real options methods are analogous to, and estimate value in, the same manner as valuation techniques used for valuing financial options, and they fall under the income approach. Option pricing models (for example, binomial, econometric [such as those of Shelton-Kassouf], and riskless-hedge arbitrage [such as those of Merton, Black-Scholes, Noreen-Wolfson, and Gastineau-Madansky]) historically have been used to value financial contracts, such as warrants and options. The use of these models recently has been extended to value strategic choices (in effect, options) and assets subject to strategic choices.

4.38 Real options theory is an analytic tool that is sometimes used in value measurement. However, not all valuation specialists are familiar with the complexities of real options theory or experienced using it in practice. Therefore, it is especially important for valuation specialists using real options theory to provide sufficient disclosures so that those not familiar with this valuation technique are able to understand its assumptions and methodology. (See paragraph 13.09f-g.) See appendix G, "Real Options," for more information related to real options theory.

Significant Assumptions of the Income Approach

4.39 The income approach relies on a number of assumptions, some of which may have a substantial effect on the resulting valuation. Even the rationale underlying the selection of the valuation techniques to use in applying this approach may incorporate a number of assumptions. In theory, the discount rate adjustment technique and expected present value technique should result in a similar value. However, as is typically the case with valuations, the results of the varied valuation techniques rarely turn out to be exact duplicates, hence the importance of the specific assumptions associated with each valuation technique. For the expected present value technique, key assumptions

¹⁸ For example, the Gordon growth method and observed market multiples are commonly used methods.

include the forecasted probability-weighted cash flows (which incorporate the effect of risk), the risk-adjusted discount rate (which incorporates the systematic risk premium), and the exit multiple or growth rate implicit within the terminal value.¹⁹ In contrast, for the discount rate adjustment technique, key assumptions include the forecasted success case or most likely cash flows, the risk-adjusted discount rate (which incorporates both the systematic risk premium and risk associated with meeting the cash flows), and the exit multiple or growth rate implicit in the terminal value. In typical early-stage enterprise valuations performed using a DCF method, the terminal value may constitute 100 percent or more of the total value as a result of losses from operations during some or all of the reporting periods up to the date used in the calculation of terminal value.

4.40 Forecasting cash flows, including developing underlying assumptions, is the responsibility of management. A valuation specialist should review management's forecasts of cash flows and management's underlying assumptions for reasonableness and ensure that the valuation assumptions are appropriate. Relevant financial and nonfinancial measures of reliability, such as benchmarking to industry comparables and management's prior record of success, should be considered. Moreover, forecasts prepared for use in a valuation should be consistent with forecasts that management prepares for the same periods for other purposes (for example, forecasts that management prepares for bankers). Cash flow assumptions should be disclosed in the valuation report, including information regarding their source and reliability. The length of time over which the forecasts are made affects their reliability and should be taken into account by the valuation specialist. Forecasts are frequently made for five-year periods, but in view of the speed at which technology may become obsolete or change, five years may be considered a long time for reliable forecasting, particularly in certain industries.

4.41 In assessing the reasonableness of management's forecasts of cash flows for purposes of applying the income approach, a valuation specialist may find it useful to consider the risk factors in table 3-1.

Asset Approach

4.42 Of the three approaches to valuing an operating enterprise and its securities under a going concern *premise of value*, the asset (or asset-based) approach, under most circumstances, is considered to be the weakest from a conceptual standpoint. It may, however, serve as a "reality check" on the market and income approaches and provide a "default value" if the available data for the use of those other approaches are fragmentary or speculative. The asset approach is typically more relevant for valuing enterprises and the securities within the enterprise in the earliest stages of development, prior to raising arm's-length financing, when there may be limited (or no) basis for using the income or market approaches. The use of the asset approach is generally less

¹⁹ See paragraphs 4.33–.34 and appendix E, "Table of Capitalization Multiples." For mature companies, the task force believes that if exit multiples are used, it would be best practice to calculate the implied growth inherent in that exit multiple and compare it to the long-term growth prospects for the entity being valued. However, as discussed in paragraph E.04, for early-stage companies, capitalization multiples calculated using realistic long-term growth rates in combination with venture capital rates of return are likely to understate the terminal value for the company. Alternative approaches (for example, using the fading growth method in combination with the long-term cost of capital) may be more appropriate for early-stage companies.

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appropriate in the later stages of development once an enterprise has generated significant intangible and goodwill value.²⁰

4.43 The *International Glossary of Business Valuation Terms*, which has been adopted by a number of professional societies and organizations, including the AICPA, and is included in appendix B of SSVS No. 1, defines the *asset approach* as "[a] general way of determining a value indication of a business, business ownership interest, or security using one or more methods based on the value of the assets net of liabilities." The general principle behind the asset approach is that the fair value of equity is equivalent to the fair value of its assets less the fair value of its liabilities. When using the asset approach, it is important to consider not only those assets that are recognized in the entity's financial statements but also assets that are not recognized in the financial statements. In particular, internally developed assets, such as intangibles created through research and development activities, are typically not recognized in the financial statements but are an important component of the enterprise value for many early-stage companies. Under the asset approach, the *asset accumulation method* is commonly used, whereby the value of the enterprise is estimated to be the net of the fair value of the enterprise's individual assets and liabilities.²¹ The fair values of individual assets and liabilities may be estimated using a variety of valuation techniques.

4.44 In applying the asset accumulation method under the asset approach, tangible asset appraisals often are performed by machinery and equipment appraisers using valuation techniques specific to fixed asset appraisals. In some instances (for example, when estimating the fair value of an asset that is part of a turnkey operation), a *cost approach*²² is often used, with the *replacement cost new* (or replacement cost) being a common technique. Under this technique, an asset's value today is what it would cost today to acquire a substitute asset of equivalent utility. In applying the cost approach, replacement cost often serves as a starting point, and then, adjustments are made for depreciation, as discussed in the following paragraph.

4.45 Assets depreciate and lose value over time due to a variety of factors:

- Physical usage and the fact that used assets have a shorter expected remaining life than new assets
- Obsolescence related to function, technology, and external factors, including locational and economic²³
- Increases in maintenance charges associated with increases in age of an asset

²⁰ See the discussion in chapter 9, "Relationship Between Fair Value and Stages of Enterprise Development."

²¹ The asset accumulation method is also commonly referred to as the adjusted net asset value method or the adjusted book value method.

²² Cost approach is one of the valuation techniques that can be used to estimate fair value of individual assets. According to the FASB ASC glossary, the *cost approach* is a valuation technique that reflects the amount that would be required currently to replace the service capacity of an asset (often referred to as current replacement cost). FASB ASC 820-10-55-3E further indicates that "[f]rom the perspective of a market participant seller, the price that would be received for the asset is based on the cost to a market participant buyer to acquire or construct a substitute asset of comparable utility, adjusted for obsolescence."

²³ Robert F. Reilly and Robert P. Schweihs, *Valuing Intangible Assets* (New York: McGraw-Hill, 1998).

4.46 Depreciation for purposes of valuation is calculated based on those factors. Accumulated depreciation under accounting principles generally accepted in the United States of America, which represents an allocation of historical costs, and accumulated depreciation based on IRS scheduled service lives may not be appropriate measures on which to base depreciation adjustments for valuation purposes.

4.47 In some cases, replacement cost may be estimated by comparing historical cost with a relevant current index published by a trade association, government agency, or other independent source. An example is the valuation of a building using a relevant construction cost index that takes into account the kind of building and its location. (Factors not incorporated into the index, such as the effects of technological changes and building cost changes, also would be considered in estimating replacement cost.)

4.48 *Reproduction cost new* (or reproduction cost) is another technique used by machinery and equipment appraisers in valuing specific fixed assets. Under this technique, an asset's value is equivalent to the cost required to replace that asset with an identical asset. Reproduction cost is often not appropriate as an approximation of replacement cost. Reproduction cost is often used in insurance valuations and does not consider advances in technology and other factors that would result in a better or more productive asset, even if one could be obtained for the same cost today. For example, a new asset may be more energy efficient or durable than a replacement asset identical to the asset replaced. A replacement cost scenario may be more "true to life" than a reproduction cost scenario because, typically, a more technologically advanced asset would be preferred over an asset identical to the asset replaced if the more technologically advanced asset was available for the same or less money.

4.49 In the absence of having built substantial goodwill or intangible value, an enterprise's value under the asset approach is based on the fair value of its tangible assets less its liabilities. The asset approach is most useful when it is applied to tangible assets and enterprises whose assets consist primarily of tangible assets. The reliability of value estimated under the asset approach tends to be greater for tangible assets recently purchased in arm's-length transactions. Because many early-stage enterprises derive the majority of their value from the development of intangible assets (for example, through research and development), the asset approach is unlikely to be appropriate for these enterprises unless the value of these intangible assets is included.

4.50 Another consideration in applying the asset approach is the basis of the valuation (that is, whether the resulting enterprise value would be considered controlling or minority and whether it would be considered marketable or nonmarketable). See chapter 7, which discusses control and marketability.

Significant Assumptions of the Asset Approach

4.51 The asset approach requires assumptions related to the individual fair value of the enterprise's assets and liabilities. In estimating the value of intangible assets, such as research and development projects, under the asset approach, for early-stage enterprises, the valuation specialist might estimate under a cost approach that part of the expenditures needed to prove the feasibility of a product or service concept serve as a proxy for the project's value. The rationale for this assumption is that if an expenditure results in the creation of

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value, then an enterprise acquiring the asset would not have to replicate those costs (that is, they are already incorporated in the asset). If historical research and development costs are used as a proxy for the replacement cost of the asset, a significant issue is the determination of whether any adjustments are necessary to reflect the costs that would be necessary to replace the asset with one of equivalent utility. For instance, the state of obsolescence or impairment of the asset subsequent to its creation is an important consideration. Often, an asset is operationally functional but has lost value as a result of new products or services that are more efficient or operationally superior. Thus, although the historical cost of the asset may be easily determinable, its replacement cost may be less than historical cost due to obsolescence or impairment, as discussed in paragraphs 4.44–46. The software industry, for example, has many examples of product obsolescence and impairment.

4.52 Another consideration is that historical costs may include *sunk costs* related to failed efforts that are not directly attributable to the asset being valued but that may have contributed indirectly. For example, if a biotechnology enterprise has spent a significant amount of money proving a new protocol for the treatment of cancer, the question arises regarding what intangible asset value this research has generated for valuation purposes. Even if, say, 9 out of the 10 protocols the enterprise experimented with failed, the cost of the experimentation process itself may be considered as contributing to the value of the effective protocol because an enterprise purchasing the intangible asset would not need to pursue those same failed paths to identify an effective protocol. In addition, the value of a known successful protocol may far exceed its cost. In some cases, research may be necessary to advance knowledge or acquire assets (for example, locate oil), and in those cases, the cost of the research phase may be considered an integral part of the cost of the enterprise's development. However, sunk costs that are incurred as the result of enterprise inexperience typically would not be considered as part of the value under the cost approach. Assumptions regarding the valuation of research would ordinarily be disclosed in a valuation report.

4.53 Another consideration is the extent to which it is appropriate to include a developer profit component in estimating an intangible asset's replacement cost. Generally speaking, as intangible assets are developed, the expectation is that the developer will receive a return of all the costs associated with the development, as well as a return on those costs. Otherwise, there would be no incentive to develop the intangible asset. In addition, it may be necessary to consider an entrepreneurial incentive, or opportunity cost.²⁴

4.54 The task force recommends that the treatment of overhead costs in determining the cost of an asset be disclosed in the valuation report. Typically, this disclosure would be most applicable in the case of a self-constructed asset.

4.55 The cost approach to valuing individual assets does not consider interest or inflation. Two valuation methods to determining replacement cost under the cost approach are useful in explaining why that is the case. One method assumes the purchase of an identical asset in its current (depreciated) condition. The other method assumes the replication of a self-constructed asset. With respect to the first method, there is no need to consider either the time value of money or inflation because the assumption is that all costs are incurred

²⁴ See footnote 23 in paragraph 4.45.

as of the valuation date. With respect to the second method, the cost would be obtained by applying to the asset's historical cost an index of specific price change for that asset. Once that index is used, there is no further need to adjust for inflation because the index adjustment is the measure of specific inflation for that asset and includes a measure of general inflation.

Chapter 5

Valuation of Equity Securities in Simple Capital Structures

5.01 This chapter provides guidance regarding the valuation of equity securities for an enterprise with a capital structure involving a single class of stock (for example, common stock). The capital structure may also include debt or debt-like preferred stock, as well as options and warrants. For a discussion of the valuation of equity securities in an enterprise having multiple classes of stock (for example, convertible or participating preferred and common stock), see chapter 6, "Valuation of Equity Securities in Complex Capital Structures."

5.02 In a *simple capital structure*, the value of the single class of securities within the enterprise is calculated based on a pro rata share of the total enterprise value less the fair value of debt,¹ measured considering the cash flows from the enterprise under current ownership and the investors' required rate of return. The key assumption underlying this method is that the price that the investors who in aggregate have control of the business are willing to pay for an enterprise reflects their risk-adjusted expected returns from that investment.² To the extent that minority owners will share in these returns, the fair value of the minority interests would need to reflect the same returns; thus, the equity value used to value the securities within the enterprise would need to be consistent with these expected returns. Subsequently, adjustments may be made for differences in the return that a market participant purchasing the minority securities would require, given any differences in the contractual rights for the minority securities and the primary exit market. See paragraph 5.07 and chapter 7, "Control and Marketability."

5.03 The valuation of an enterprise used when valuing the minority securities within the enterprise is not necessarily the same as the fair value of the enterprise used when valuing the enterprise as a whole. In particular, the hypothetical transaction considered in estimating the fair value of the securities within an enterprise is a sale of those securities, whereas the hypothetical transaction considered in estimating the fair value of the enterprise is a sale of the enterprise.

5.04 The key difference between the valuation of the enterprise for valuing the minority securities within the enterprise and the fair value of the enterprise itself is that a minority investor does not have the ability to change the enterprise's strategy and policies. Therefore, the assumptions used in valuing the minority securities within the enterprise should be consistent with the enterprise's plans under current ownership and the investors' required rate of return.

¹ If the capital structure also includes options or warrants, the value of these options and warrants should be subtracted from the total equity value to obtain the value of the single class of equity (for example, common stock). Thus, in this situation, the calculation becomes iterative when the per share value of the single class of equity is used as an input into the option and warrant valuation, and the aggregate value of the options and warrants is subtracted to estimate the value of the single class of equity.

² Most privately held companies have investors who in aggregate have control of the enterprise. When valuing the minority securities within an enterprise, it is appropriate to consider these investors' required rate of return.

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5.05 Some enterprises (for example, family-owned or other tightly held enterprises) may intend to remain private indefinitely. When considering the enterprise value for the purpose of valuing the minority securities in an enterprise that plans to remain private indefinitely, it is appropriate to use company-specific assumptions into perpetuity (consistent with the assumptions that an investor in a minority interest would make in valuing that interest).

5.06 Almost all venture capital-backed and private equity-backed companies will ultimately seek liquidity through an initial public offering (IPO) or sale of the company. When considering the enterprise value for valuing the minority securities in a venture capital-backed or private equity-backed enterprise, it is appropriate to use company-specific assumptions through the liquidity event. At the liquidity event, the estimated exit value would be based on the amount that might be realized in an IPO or a sale, considering the way that IPO investors or a new third-party buyer would evaluate the enterprise at that point.

5.07 The valuation for the minority interests may then be adjusted for differences in risk attributable to lack of various control and information rights and lack of marketability, if appropriate. See chapter 7.

5.08 Table 5-1 briefly describes some of the key differences between the valuation of the enterprise for valuing the minority securities within the enterprise and the fair value of the enterprise. This table is not all-inclusive, and there are other differences that are not discussed here. Readers should refer to Financial Accounting Standards Board (FASB) *Accounting Standards Codification (ASC) 718, Compensation—Stock Compensation*; 505-50; and 350, *Intangibles—Goodwill and Other*, for further guidance.

Table 5-1

<i>Minority Interest in the Enterprise (FASB ASC 718 and 505-50)</i>	<i>Controlling Interest in the Enterprise (FASB ASC 350)</i>
<ul style="list-style-type: none">• Assumes sale of a minority interest in the enterprise on the valuation date.• Market participant would be a buyer for the minority interest.• Considers the enterprise value consistent with<ul style="list-style-type: none">— cash flows and capital structure that market participants buying a minority interest would expect under current ownership (through the expected liquidity event, if any).— tax attributes under current ownership through the expected liquidity event, if any.— company-specific cost of capital (based on the investors' expected rate of return).	<ul style="list-style-type: none">• Assumes sale of the enterprise on the valuation date.• Market participant would be a buyer for a controlling interest.• Considers the enterprise value consistent with<ul style="list-style-type: none">— cash flows and capital structure that market participants buying the entire enterprise would expect (excluding buyer-specific synergies), which might assume changes to strategy.— tax attributes reflecting the likely structure of change of control transaction.— market participant cost of capital.

<i>Minority Interest in the Enterprise (FASB ASC 718 and 505-50)</i>	<i>Controlling Interest in the Enterprise (FASB ASC 350)</i>
<ul style="list-style-type: none"> Valuation may reflect adjustments relative to guideline company multiples, if justified based on company-specific factors.³ 	<ul style="list-style-type: none"> Valuation may reflect adjustments relative to guideline company multiples to the extent that market participants buying the enterprise would make such adjustments.

5.09 The reason it is appropriate to use company-specific assumptions when estimating the value of the enterprise for the purpose of valuing the minority interests within the enterprise is that the unit of account is the minority interest, not the enterprise as a whole. A market participant investing in a minority interest in the enterprise would not be able to change the company's strategy and policies. Therefore, a market participant investing in a minority interest in the enterprise would consider the company's plans under current ownership.

Fair Value of Debt for Purpose of Valuing Equity

5.10 For the purpose of valuing minority interests in the equity securities of an enterprise, the valuation specialist would need to estimate the fair value of equity. Thus, if the specialist begins by estimating the total enterprise value, the specialist would then subtract the fair value of debt,⁴ if any, from the total enterprise value.⁵

5.11 The fair value of debt may not be the same as its book value. A fair value of debt lower than book value reflects the benefit to equity holders from having locked in a below-market interest rate. This situation can arise either due to overall market conditions or company-specific credit issues. For example, if Company A issued debt on June 30, 2X08, at London Interbank Offered Rate (LIBOR) + 300 basis points (bps) with a 5-year maturity but as of June 30, 2X11, would have to pay LIBOR + 700 bps to refinance the debt for the remaining 2 years to maturity, the equity holders capture additional value for the remaining 2 years.

5.12 A fair value of debt higher than book value reflects the cost to equity holders from being locked into an above-market interest rate. For example, if company B issued debt upon reemergence from bankruptcy in 2X08 at LIBOR + 700 bps with a 5-year maturity but in 2X11 had improved performance sufficiently to be able to refinance the debt at LIBOR + 300 bps for the remaining

³ See chapter 7, "Control and Marketability."

⁴ From the economic perspective, the discussion in this section is equally applicable to debt and debt-like preferred stock, irrespective of whether it is accounted for as debt or equity. Debt-like preferred stock is junior to debt but almost always senior to other equity securities, and it plays the same role in the capital structure as mezzanine debt. It typically pays a cumulative dividend through a liquidity event, and it may be mandatorily redeemable on a specified date. It does not have conversion rights or participation rights that would allow it to participate in any increase in the fair value of the company beyond the specified dividend rate; however, in many cases, the same investors who hold the debt-like preferred stock hold proportionate amounts of common stock. Because debt-like preferred stock does not have conversion rights or the right to participate in future rounds, it may be treated as debt, and its fair value may be subtracted from the enterprise value, along with other debt, before allocating the remaining equity value to the other equity securities in the capital structure.

⁵ Note that in some cases, the market approach or income approach is used to value equity directly using equity multiples or after-debt cash flows. If such an approach is used, it is not appropriate to subtract debt to estimate the equity value.

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2 years to maturity, the equity holders may have a disadvantage for the remaining 2 years. The disadvantage applies only if the company is locked into the above-market rate (that is, if the debt is not prepayable or has significant prepayment penalties). If the debt is prepayable, the fair value should not be significantly higher than book value because if the company is paying an above-market rate, the company should refinance.

5.13 Because debt may include change of control provisions, the benefit (or penalty) to the equity holders associated with the below- (or above-) market yield will typically persist only through the anticipated liquidity event. In fact, the maturity of the debt and the duration of any penalties associated with an early change of control are factors that should be considered in establishing the likely timing of a liquidity event. The fair value of debt for the purpose of valuing minority interests in an enterprise should be estimated considering the expected cash flows, including the coupons and principal payments, taking into account any change of control provisions that would apply at the expected liquidity event. If the nature and timing of the liquidity event is uncertain, it may be appropriate to consider multiple scenarios and estimate the fair value as the probability-weighted average across these scenarios.

5.14 If the company's debt is traded, the traded price may be the best estimate of fair value, assuming the transaction is determined to be orderly. It should be noted, however, that the market participants investing in equity are different than the market participants investing in debt; therefore, the fair value of debt for the purpose of valuing equity may differ from the traded price for the debt.⁶

5.15 When a traded price is not available, the typical valuation technique to estimate the fair value of the debt is to use a discounted cash flow analysis, estimating the expected cash flows for the debt instrument (including any expected prepayments [for example, if prepayment is required upon a liquidity event]) and then discounting them at the market yield. This valuation technique is referred to as the *yield method*.

5.16 The market yield for the debt as of the valuation date can be measured relative to the issuance date yield by observing

- the change in credit quality for the company.
- the change in credit spreads for comparable securities of comparable companies, considering the characteristics of the debt compared to the comparables, including the seniority, strength of the covenants, company performance, quality of the assets securing the debt, maturity, and any other differences that drive debt value.
- for fixed-rate debt, the change in the reference rate matching the remaining maturity of the debt (that is, the change in the LIBOR swap rate or treasury rate).

5.17 For example, to estimate the fair value of the debt described previously for Company A as of June 30, 2X11, the first step is to look at the credit quality of the company and this debt issuance. Although the company is not

⁶ For the purpose of valuing the minority interests in the equity securities within an enterprise, the unit of account is a single share. Therefore, the analysis should consider the market participants who might invest in a share in the enterprise, not the market participants who might invest in the debt securities or the enterprise as a whole.

rated, when the debt was issued on June 30, 2X08, the spread of 300 bps corresponded to roughly a B+ rating. In the 3 years since issuance, the company made significant progress on its business plan and grew revenues significantly. Based on a synthetic rating analysis considering the company's most recent financial statements, the estimated rating for the debt as of June 30, 2X11, is BB+. However, during that same 3 years, the market risk premium for a given credit quality increased significantly. In particular, the credit spreads for debt rated B+ increased from roughly 300 bps to 900 bps, an increase of 600 bps. For Company A's debt, this increase was offset to some extent by the improvement in credit quality. Spreads for debt rated B++ as of June 30, 2X11, were, on average, 200 bps lower than spreads for debt rated B+. Therefore, the estimated market yield as of June 30, 2X11, is LIBOR + 700 bps. Because the market yield is higher than the coupon, the fair value of debt is thus lower than the book value.

5.18 In some cases, the issuance of debt or debt-like preferred stock may not initially be considered to be an arm's-length transaction. For example, new debt may be issued to existing debt investors as part of a recapitalization following a bankruptcy or in a negotiation to avoid a default, and debt-like preferred stock may be issued to investors who also received common stock proportionately. In these cases, the market yield for the debt or debt-like preferred stock as of the valuation date can be measured by considering the

- credit quality for the company.
- credit spreads for comparable securities of comparable companies, considering the characteristics of the debt compared to the comparables, including the seniority, strength of the covenants, company performance, quality of the assets securing the debt, maturity, and so on.
- base rate corresponding to the maturity of the debt (for example, the treasury rate).

5.19 Another valuation technique for estimating the fair value of debt is to include the future payoff for the debt within the model used for allocating the enterprise value among the various claims on the enterprise as a *zero coupon bond equivalent*. The zero coupon bond equivalent for a debt security is the future payoff amount that results in an expected value of debt in the allocation model equal to its fair value:

- For paid-in-kind debt without covenants, the future payoff for the debt equals its principal plus accrued interest through maturity, and the fair value of the debt can be measured via an allocation methodology that includes the debt.
- For debt that pays cash interest or is amortizing, the fair value of the debt will be higher than the fair value of an equivalent non-amortizing debt in which the interest accrues through maturity.⁷ Because allocation models typically model the payoff amounts for the various securities, rather than modeling the interim cash

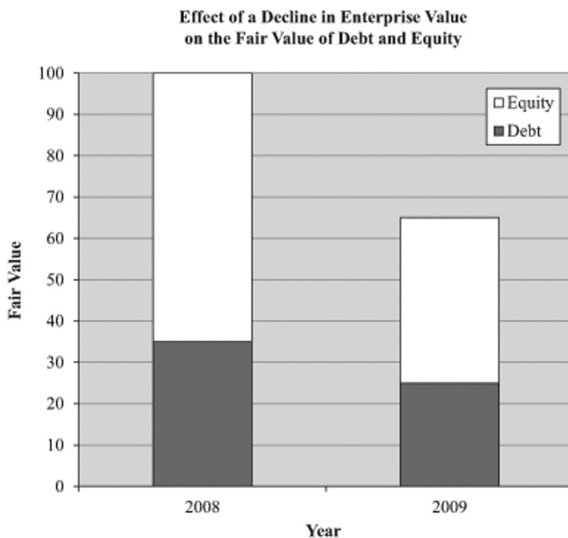
⁷ Paid-in-kind (PIK) debt is riskier than debt that pays cash interest because the performance of the enterprise can decline significantly without triggering a default (unless the debt has tight covenants). If the enterprise is obligated to make cash interest, principal payments, or both, the enterprise will default whenever the cash flows are not sufficient to cover these payments. When enterprise performance is declining, triggering a default earlier improves the recovery rate for the debt and effectively decreases its risk.

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flows, they typically cannot capture the value of the requirement to make current payments on the debt.

5.20 Thus, even if the debt is included in the allocation model, it will usually be necessary to estimate its fair value outside the allocation model (for example, using a yield method, as discussed previously).⁸ It is then possible to include the debt within the allocation model by solving for the future payoff amount that results in an allocation to the debt matching this fair value. See paragraph 6.36c for a more detailed description of the pros and cons of including debt within the allocation model.

5.21 It should be noted that a decline in the fair value of debt is usually accompanied by a decline in the overall enterprise value as the enterprise performance declines or the enterprise's overall cost of capital increases. The overall decline in the fair value of the enterprise will typically be shared between the debt and equity. In the following example, the total enterprise value was \$100 million in March 2008, with newly issued debt with a \$35 million principal balance paying 10 percent interest and an equity value of \$65 million. By March 2009, following the financial crisis in the fourth quarter of 2008, the enterprise value had fallen by 35 percent, and rates had increased to the point that the fair value of debt had fallen to \$27 million, leaving \$38 million for equity. Thus, in this example, the fair value of debt declined slightly more than 20 percent, and the fair value of equity declined slightly more than 40 percent.



⁸ In a few situations, it may not be possible to estimate the market yield from public debt data. For example, in some leveraged buy-out situations, the debt may have much higher leverage than is observable in the public debt markets. In these situations, the debt will behave more like equity, and the value may be estimated using the option pricing method (OPM) directly. For PIK debt, one approach would be to allocate the enterprise value within the OPM using a payoff amount for the debt equal to its face value, plus accrued interest through the liquidity event, plus any prepayment penalty. For debt with cash interest, one approach would be to subtract the present value of the cash interest from the enterprise value and then allocate the residual value within the OPM using a payoff amount for the debt equal to its face value plus any prepayment penalty. When estimating the fair value of debt using the OPM directly, it is a best practice to also calculate the yield implied by the analysis and assess whether it is reasonable, given the leverage and terms of the debt.

Chapter 6

Valuation of Equity Securities in Complex Capital Structures

6.01 This chapter provides guidance regarding the valuation of equity securities for an enterprise with a capital structure involving multiple classes of stock. Many (if not most) venture capital-backed and private equity-backed enterprises are financed by a combination of different equity securities, each of which provides its holders with unique rights, privileges, and preferences (hereinafter referred to collectively as rights). Often, these enterprises issue both preferred and common shares, with the preferred stock comprising several series, resulting from successive rounds of financing, each of which has rights that likely differ from those of other series. The valuation specialist should determine how the equity value as a whole is distributed among the various equity claimants to it.

6.02 Typically, enterprises with multiple classes of stock divide the classes into two broad categories: preferred and common. Sometimes, one of the principal objectives of issuing preferred stock—the granting of different rights to different groups of stockholders—may be achieved instead by issuing multiple classes of common stock or different classes of partnership units in a limited liability company. The issues discussed in this chapter for valuing equity securities in complex capital structures apply not only to preferred versus common stock but also to any situations involving multiple classes of equity issued by an enterprise wherein some classes have senior rights similar to those of holders of preferred stock.

6.03 Capital structures involving multiple classes of securities are often found in start-up enterprises funded by venture capital. Value creation in such enterprises is frequently a high-risk process. Venture capitalists may fund such enterprises beginning at an early stage of the enterprise's existence when the enterprise may have an unproven business model, little or no infrastructure, an incomplete management team, and little or no short-term prospects of achieving a self-sustaining business with revenue, profits, or positive cash flows from operations. In spite of such challenges, such enterprises may draw significant capital from venture capitalists and other investors because of the potential for high returns in the event an enterprise is successful in achieving its plans.

6.04 Capital structures involving multiple classes of securities may also be found in larger enterprises funded by private equity. Private equity investors seek high returns through a variety of strategies (for example, acquiring well-run companies that can be used as a platform for expansion [a "roll up"] or acquiring poorly run companies in which profitability can be improved through better management [a "turnaround"]). In many cases, private equity investors also increase the risk and reward profile for their equity investments through leverage.

6.05 In view of the high risks associated with their investments, venture capital and private equity investors typically seek downside protection and significant control or influence over the enterprises' activities. Thus, in many cases, in exchange for cash investments in the enterprise, investors receive preferred stock that conveys various rights to its holders. For venture

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capital-backed enterprises, initial issuances of common stock are primarily to founders for a nominal or no cash consideration. For private equity-backed enterprises, shareholders in the acquired enterprise may retain common stock, and in addition, common stock may be granted to key executives. In addition, employees are often granted options to purchase the enterprise's common stock. The result is that venture capital-backed and private equity-backed enterprises frequently have complex capital structures with various classes of stock involving different rights:

- a. Venture capital-backed companies are usually funded through a series of financing rounds, which are usually negotiated independently and often involve different investors; thus, the capital structure may include many different classes of preferred stock with different rights and preferences.
- b. Private equity-backed companies are usually funded through a large initial investment to buy out existing shareholders, and a new capital structure is often put in place in connection with this investment. Private equity investors are also more likely to set up a holding company as a limited liability company, using profits interests as compensation for key executives.
- c. Another capital structure used by some private equity funds is for the investors to receive both a debt instrument or debt-like preferred stock with a specified cumulative dividend rate (sometimes referred to as the hurdle rate), as well as the majority of the common stock, reserving a fraction of the common stock as a compensation pool for executives. In this structure, all investors receive both preferred and common stock, so even at the initial investment date, the transaction included multiple elements, so the preferred stock cannot be assumed to be worth its face value without further analysis. If the leverage (debt divided by total invested capital) on the debt or preferred stock falls within the observable range for commercial debt issuances, the Equity Securities Task Force (task force) believes that the best practice for estimating the fair value of a debt-like preferred stock is the yield method, as described in paragraphs 5.15–.18. This approach captures the required return on the debt or debt-like preferred investment, allowing for the fact that the investors have control of the timing of exit, similar to the control that covenants provide to commercial debt investments. If the leverage on the investors' debt or preferred stock holding falls outside the observable range for commercial debt issuances (for example, if the principal value is set at 100 percent of the total invested capital), then the common stock can be considered as an option.

6.06 Estimating the value of the different classes of equity within an enterprise requires an understanding of the rights associated with each class. Such rights are meaningful, substantive rights and often are intensely negotiated and bargained for by the investors.¹ The holders of the preferred instruments

¹ The terms *meaningful* and *substantive*, as applied to rights, are used in this chapter to describe preferred stock rights that are important to a venture capitalist or private equity investor, in the sense that those rights provide the investor a level of control and influence that he or she requires in order to invest in the enterprise.

often structure the associated rights to allow the holders to control the business and direct the company's operations.

6.07 Almost all venture capital-backed and private equity-backed companies will ultimately seek liquidity through an initial public offering (IPO) or sale of the company; thus, the methods in this chapter focus on estimating the fair value of the different classes of equity based on the future payoffs at the time of the liquidity event. However, there are other situations in which a company with a complex capital structure may remain private indefinitely. In these situations, the liquidity event should be considered to be the event in which the preferred stock is to be redeemed or repurchased. Examples include the following:

- a. In rare instances, a venture capital-backed company will "go private" by acquiring the preferred stock from outside investors. Studies are available that provide statistics on the likelihood of exit. In this situation, the company typically retires the preferred stock at the repurchase date, and this repurchase may be treated as a "liquidity event."
- b. Some family-owned or other closely held businesses expect to remain private for the indefinite future. In most cases, these companies will have a simple capital structure. (See chapter 5, "Valuation of Equity Securities in Simple Capital Structures.") For more complicated capital structures, the valuation specialist will need to consider the specific facts and circumstances, considering the time frame until the resolution of the uncertainties relating to the future payoffs to the various classes of equity. Note that when these companies issue stock-based compensation to their employees, they typically also provide some degree of liquidity to these employees (for example, through a repurchase program that may be available once per year). Such liquidity rights should also be considered when estimating the fair value of the related equity securities. If there is a share repurchase program, the repurchase price may be fair value or formula driven, depending on the terms of the arrangement.

6.08 For simple capital structures (that is, capital structures that include only common stock plus debt, debt-like preferred securities, or both), it is possible to estimate the value of the securities within the enterprise by directly estimating the fair value of any debt and debt-like preferred securities using the yield method, subtracting those fair values from the total enterprise value, then allocating the residual equity value pro rata to the common stock. See chapter 5. Thus, the more sophisticated value allocation methods discussed later in this chapter may not be required in this circumstance.

Rights Associated With Preferred Stock

6.09 The rights received by preferred stockholders may be divided into two broad categories: economic rights and control rights. Economic rights are designed to facilitate better economic results for preferred stockholders as compared with common stockholders. Those rights relate to the timing, preference, and amounts of returns the preferred stockholders receive as compared with the holders of other classes of stock. Control rights provide preferred

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stockholders with the ability to influence or control the enterprise in a manner that is disproportionate to their ownership percentages.

6.10 The following are some of the typical economic rights enjoyed by preferred stockholders (which are discussed in detail in appendix H, "Rights Associated With Preferred Stock"):

- a. Preferred liquidation preferences
- b. Preferred dividends
- c. *Mandatory redemption rights*
- d. *Conversion rights*
- e. *Participation rights*
- f. *Antidilution rights*
- g. *Registration rights*

6.11 The following are some of the typical control rights enjoyed by preferred stockholders (which are discussed in detail in appendix H):

- a. *Voting rights*
- b. Protective provisions and veto rights
- c. *Board composition rights*
- d. *Drag-along rights*²
- e. *Right to participate in future rounds*
- f. *First refusal rights*
- g. *Tag-along rights*
- h. *Management rights*
- i. *Information rights*

6.12 Control rights are demanded by preferred stockholders to allow them to control or significantly influence the manner in which an enterprise governs itself and manages its operating and financial affairs, irrespective of those stockholders' proportional ownership interests. For example, preferred stockholders may own 30 percent of the outstanding voting capital stock, but control rights could allow them to control the enterprise's operations as if they owned a majority of the outstanding voting capital stock. Control rights generally lapse at the time of an IPO as the preferred stock is converted into common stock.

6.13 The following tables summarize the nature of the rights typically held by preferred stockholders, whether such rights are generally considered meaningful and substantive in the context of valuing privately held company equity securities, and whether methods for valuing equity securities typically consider such rights (see appendix H for additional details):

² Drag-along rights should not be confused with tag-along rights, which have different meanings in various other contexts. (See appendix H, "Rights Associated With Preferred Stock," and the glossary for definitions.)

Table 6-1

Economic Rights

<i>Nature of right</i>	<i>Is the right meaningful and substantive?</i>	<i>Purpose of right</i>	<i>When, if ever, is the right generally meaningful and substantive before initial public offering (IPO)?</i>	<i>Is the value of the right readily and objectively measurable?</i>	<i>Do valuation methods typically consider the right?</i>
Preferred dividends (noncumulative)	No	Preference to receive dividends if declared	N/A ¹	N/A	N/A
Preferred dividends (cumulative)	Yes	Aims to provide a minimum fixed return in all situations except IPO	Entire life of instrument	Yes	Yes
Liquidation preference (nonparticipating)	Yes	Ensures higher return up until break-even point ²	Up until break-even point ³	Yes	Yes
Liquidation preference (participating)	Yes	Ensures disproportionately higher return in all situations except IPO	Entire life of instrument	Yes	Yes
Mandatory redemption	Yes ⁴	Right to return of capital; aims to provide liquidity	Entire life of instrument	No	No
Conversion (fixed or variable ratio)	Yes	Produces better economic results in certain circumstances	Entire life of instrument	Yes	Yes
Participation (fixed or variable ratio)	Yes	Ensures disproportionately higher return in all situations except IPO	Entire life of instrument	Yes	Yes
Antidilution	Yes	Aims to protect value of investment	Entire life of instrument	Maybe ⁵	No
Registration	No ⁶	Aims to provide liquidity	N/A	N/A	N/A

(continued)

Economic Rights—continued

- 1 Noncumulative preferred dividends are payable only if declared. Because it is unusual for private companies to declare dividends, these rights are considered nonsubstantive until the company considers actually declaring a dividend. Cumulative preferred dividends are payable regardless of whether declared and, thus, increase the liquidation preference for the preferred and are considered substantive.
- 2 Break-even point refers to the value of the proceeds resulting from an assumed enterprise liquidation for which conversion of preferred to common stock would result in proceeds for preferred shareholders equal to their liquidation preference.
- 3 See table note 2.
- 4 For example, the significance of considering mandatory redemption is indicated in paragraphs 4–7 of Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 480-10-25. FASB ASC 480, *Distinguishing Liabilities from Equity*, requires mandatorily redeemable financial instruments to be classified as a liability by the issuer. There is a joint FASB and International Accounting Standards Board (IASB) project, *Financial Instruments with Characteristics of Equity (formerly Liabilities and Equity)*, which, among other things, is expected to address mandatorily redeemable instruments. The guidance issued in that project is expected to supersede guidance in FASB ASC 480. Certain provisions of FASB ASC 480 regarding mandatorily redeemable shares have been deferred indefinitely. However, in October 2010, FASB and the IASB acknowledged that, at that point, they did not have the capacity to devote the time necessary to deliberate this project's issues. Consequently, the boards decided to not issue an exposure draft in the near term as originally planned. The boards will return to this project when they have the requisite capacity. For the latest information on the status of this joint FASB and IASB project, please refer to FASB's website at <http://www.fasb.org/cs/ContentServer?c=FASBContent.C&pagename=FASB%2FFASBContent.C%2FFP-projectUpdatePage&cid=1175801889654>.
- 5 Antidilution provisions (for example, down-round protection features) increase the value of preferred stock and preferred or common warrants by increasing the conversion ratio or decreasing the warrant strike price if shares are issued at a lower price at a future date. The existence of such provisions may have minimal impact on the value of the common stock, and the valuation methods discussed in this chapter will generally not capture the value of these provisions. Note, however, that under FASB ASC 815-40-15, the existence of an antidilution provision may indicate that a freestanding warrant or other freestanding derivative should be classified as a liability and measured at fair value each reporting period. Similarly, the conversion option for a mandatorily redeemable preferred stock that meets certain other criteria (for example, net settlement) needs to be bifurcated and measured at fair value. For the valuation of these instruments themselves, if the company expects to raise one or more future financings that may trigger the provision, the provision should be taken into account in a simulation model (or a lattice if only one financing is expected); Black-Scholes would generally not be an appropriate model for valuing these instruments. If the company expects to reach a liquidity event without needing any additional financing, an option pricing model or hybrid model may be used to estimate the fair value of the warrant or conversion option for the preferred stock. The probability-weighted expected return method is generally not an appropriate method for valuing a warrant or bifurcating a conversion option because it does not provide enough granularity in the future scenarios. The guidance regarding the accounting treatment for derivatives is complex and subject to change. Companies that issue these securities should consult with their auditors to assess the appropriate accounting treatment.
- 6 Typically, private enterprises go public when they are operationally ready, and market conditions are conducive to a successful initial public offering (IPO). It is not typical for a private enterprise to go public as a result of the preferred stockholders exercising their rights to force the enterprise to file a registration statement for an IPO.

Table 6-2

Control Rights

<i>Nature of right</i>	<i>Is the right meaningful and substantive?</i>	<i>Purpose of right</i>	<i>When, if ever, is the right generally meaningful and substantive before initial public offering (IPO)?</i>	<i>Is the value of the right readily and objectively measurable?</i>	<i>Do valuation methods typically consider the right?</i>
Voting	Yes	Ability to control or influence	Entire life of instrument	No	No
Protective provisions and veto rights	Yes	Ability to control disproportionate to ownership	Entire life of instrument	No	No
Board composition	Yes	Ability to control disproportionate to ownership	Entire life of instrument	No	No
Drag along	Yes	Ability to control disproportionate to ownership	Entire life of instrument	No	No
Right to participate in future rounds	Yes	Ability to maintain ownership percentage	Entire life of instrument	No	No
First refusal	Yes	Restricted ability to sell common stock	Entire life of instrument	No	No
Tag along	Yes	Restricted ability to sell common stock	Entire life of instrument	No	No
Management	Yes	Access to inside information not available to common stockholders	Entire life of instrument	No	No
Information	Yes	Access to inside information not available to common stockholders	Entire life of instrument	No	No

Methods of Estimating the Fair Value of Multiple Classes of Securities

6.14 As noted earlier, many early-stage enterprises historically have used general "rule-of-thumb" discounts to derive the fair value of their common shares from the prices of recent rounds of preferred stock. However, as discussed in footnote 4 in paragraph .05, those methods are not considered acceptable in terms of providing a reasonable and supportable fair value estimate.

6.15 An alternative involves valuing multiple classes of securities, considering the distribution of total equity value and the rights and preferences for each class of securities.

6.16 This chapter discusses four methods for valuing equity securities used in practice as observed by the task force. Other methods also may exist or be developed in the future.

Overall Comments Applicable to All Four Methods for Valuing Equity Securities

6.17 No single method for valuing equity securities appears to be superior in all respects and circumstances over the others. Each method has merits and challenges, and there are trade-offs in selecting one method instead of the others. The level of complexity differs from one method to another.

6.18 Some methods for valuing equity securities may appear to be theoretically superior to others. However, such apparently superior methods typically are more complex, and often, it may be difficult to corroborate estimates of certain critical inputs. In addition, there appears to be no method available that takes into account all rights of preferred stockholders. Rather, due to the nature and complexity of some of the typical preferred stock rights, the effect of only certain of the various preferred stock rights is considered under the available methods. That most of these rights typically do not appear in conjunction with securities issued by publicly traded enterprises contributes to the absence of market comparables for valuation specialists to draw upon. The resulting challenges in estimating fair value do not, however, justify the use of "rules of thumb."

6.19 Those preferred stockholder rights that are not taken into account under any of the commonly used equity value allocation methods may be grouped into three categories:

- a. *Economic—liquidity.* Mandatory redemption rights and registration rights, whose objective is to enhance preferred stock liquidity, and first refusal rights and tag-along rights, whose objective is to reduce common stock liquidity.
- b. *Economic—valuation.* Antidilution rights, protecting against future declines in value. (However, see note 5 to table 6-1 for a discussion of the circumstances under which these rights need to be considered explicitly.)
- c. *Control (and influence).* Voting rights, protective provisions, and veto rights; board composition rights; drag-along rights; first refusal rights and tag-along rights; management rights; and information rights.

6.20 Because the rights described in paragraph 6.19 are generally not considered as explicit economic rights, they may be captured in adjustments applied to the common stock value after estimating the value of the securities consistent with the investors' required rate of return³ using one of the methods described subsequently. See chapter 7, "Control and Marketability," for a discussion of these adjustments. The challenges in valuing these rights do not lead to the conclusion that the rights are lacking in substance or are unimportant to market participants who might purchase the common stock.

Considerations Affecting the Selection of a Method for Valuing Equity Securities

6.21 The following sections describe four methods for valuing equity securities: the probability-weighted expected return method (PWERM), the option pricing method (OPM), the current value method (CVM), and the *hybrid method*. Most of these methods are illustrated by examples in appendix I, "Illustration of Methods for Valuing Equity Securities." Other methods may be used, but these four methods have been commonly used in practice. Sometimes, more than one method is used, and the results of one method may be used for purposes of corroborating the results of another.

6.22 The task force recommends that in selecting a method for valuing equity securities, the following criteria be considered:

- a. The method reflects the going-concern status of the enterprise. The method reflects that the value of each class of securities results from the expectations of security holders about future economic events and the amounts, timing, and uncertainty of future cash flows to be received by security holders.
- b. The method assigns some value to the common shares, unless the enterprise is being liquidated,⁴ and no cash is being distributed to the common shareholders.
- c. The results of the method can be either independently replicated or approximated by other valuation specialists using the same underlying data and assumptions. The method does not rely so heavily on proprietary practices and procedures that assurance about its quality and reliability cannot be readily and independently obtained.
- d. The complexity of the method is appropriate to the enterprise's stage of development. Consider, for example, a start-up enterprise with few or no full-time employees and in the early stages of development. A highly complex PWERM performed at high cost may not be appropriate for such an enterprise. The assumptions underlying that valuation could be highly speculative, and the variability in the valuation may be correspondingly high. An option pricing

³ As discussed in paragraph 5.02, most privately held companies have investors who in aggregate have control of the enterprise. When valuing the minority securities within an enterprise, it is appropriate to consider these investors' required rate of return.

⁴ In April 2013, the Financial Accounting Standards Board issued Accounting Standards Update (ASU) No. 2013-07, *Presentation of Financial Statements (Topic 205): Liquidation Basis of Accounting*. The amendments in this ASU are intended to clarify when an entity should apply the liquidation basis of accounting. In addition, this ASU provides principles for the recognition and measurement of assets and liabilities and requirements for financial statements prepared using the liquidation basis of accounting.

model, with its simpler set of assumptions, may give equally reasonable results at a lower cost.

The PWERM

6.23 Under a PWERM, the value of the various equity securities are estimated based upon an analysis of future values for the enterprise, assuming various future outcomes. Share value is based upon the probability-weighted present value of expected future investment returns, considering each of the possible future outcomes available to the enterprise, as well as the rights of each share class. Although the future outcomes considered in any given valuation model will vary based upon the enterprise's facts and circumstances, common future outcomes modeled might include an IPO, a merger or sale, a dissolution, or continued operation as a private enterprise until a later exit date.⁵

6.24 This method involves a forward-looking analysis of the potential future outcomes available to the enterprise, the estimation of ranges of future and present value under each outcome, and the application of a probability factor to each outcome as of the valuation date. The following list is a simple overview of how this method may be applied. The specific construct of the model and the assumptions used will depend on the facts and circumstances surrounding the enterprise.

- a. *Determine the possible future outcomes available to the enterprise.* First, the valuation specialist needs to work with management to determine the range of possible future exit scenarios for the enterprise (for example, IPO, merger or sale, dissolution, or continued operation as a private enterprise until a later exit date).
- b. *Estimate the future equity value under each outcome, either as a point estimate or range.* The future *premoney value* of the enterprise is estimated at the date of each possible future outcome. A simple application might use a single value and date for each outcome, whereas a more complex application might use a range of values and dates for each outcome. At a minimum, the range of outcomes considered should include both high and low values (for example, a high-value strategic sale and a low-value sale of assets). If the range of possible future values considered is too narrow, the PWERM will not fully capture the value of the downside protection and the value differences driven by differences in seniority and liquidation preferences for the preferred stock. In some cases, it may be appropriate to consider a probabilistic distribution of values for a given scenario. For example, if the company is considering a near-term IPO, but the IPO fails, and the company is unsure what exit value it might achieve, it might be reasonable to use specific details for the IPO scenario and a lognormal distribution of future values (such as in the OPM) in the postponed exit scenario. This approach would also be appropriate in the situation in which the company has a number of possible near-term exits, but it may also remain private for an extended period of time (the private company

⁵ As discussed in paragraph 6.07, almost all venture capital-backed and private equity-backed companies will ultimately seek liquidity through an initial public offering (IPO) or sale of the company; thus, it is typically not appropriate to model a scenario in which such a company remains private indefinitely.

- scenario). See the discussion of the hybrid method in paragraphs 6.48–54.
- c. *Allocate the estimated future equity value to each share class under each possible outcome.* Within each scenario, the future values are then allocated to the various shareholder classes based upon the rights afforded each class, assuming each class of shareholder will seek to maximize its value. For example, at value levels when preferred shareholders would maximize their return by converting to common stock, conversion is assumed. Conversely, at value levels when return would be maximized by exercising a liquidation preference, such exercise is assumed. The allocation should also include the dilution impacts of any additional required financings for each scenario and any options and warrants that may be exercised, when exercise should be assumed for a given scenario (with the resulting proceeds added to the equity value) if exercising the options and warrants would be optimal in that scenario. Companies frequently reserve an option pool that includes the options that may be issued to new and existing employees as the company progresses toward a successful liquidity event. In the PWERM, it is appropriate to include in the allocation the options that will be needed to reach each exit scenario, along with the cash that would be realized from their exercise prices.
 - d. *Weight each possible outcome by its respective probability to estimate the expected future probability-weighted cash flows to each share class.* Probabilities are assigned to each of the possible future outcomes. If desired, the valuation model may include various sub-scenarios within each outcome, each with its own probability, or it may use a probability distribution to model a range within each outcome.
 - e. *Discount the expected equity value allocated to each share class to present value using a risk-adjusted discount rate.* The expected shareholder value under each outcome is discounted back to the valuation date using appropriate discount rates. The valuation specialist should consider whether different discount rates should be used for each shareholder class, considering the relative risk of each class.⁶
 - f. *Divide the present value allocated to each share class by the respective number of shares outstanding to calculate the value per share for each class.* The per-share value of each class of shares, including the common stock, is then calculated. A good check is to compare

⁶ The discount rate for the common stock and junior preferred securities may take into consideration the leverage imposed by the debt, as well as the liquidation preferences senior to each class. The weighted average discount rate across all the classes of equity should equal the company's cost of equity. This approach is a form of method 2 of the expected present value technique discussed in paragraph 4.28.

Note that in some circumstances, the scenarios modeled in a probability-weighted expected return method (PWERM) framework incorporate a different level of company-specific risk. For example, the IPO scenario may be modeled using aggressive banker projections, but the sale or later exit scenarios may be modeled using more conservative internal projections. In these situations, it may be appropriate to include an additional risk premium within specific scenarios and to estimate the conditional present value for each security before estimating the probability-weighted average. Even in these situations, however, it is important to keep in mind that the selected discount rate for each security should reflect the overall required rate of return to the expected cash flows for that security (that is, a portfolio rate of return).

the share price of the latest round of preferred financing with the value implied for that share class by the model to assess whether the assumption set used is reasonable in light of that actual financing transaction.

- g. Consider additional adjustments.* The valuation specialist should consider whether any additional discounts are appropriate (for example, discounts for illiquidity or lack of marketability). See chapter 7 for a discussion of these adjustments.

6.25 Although the PWERM focused on the future exit values and their allocation to each class of equity, it is also important to consider the interim cash flows. Typically, the PWERM is used when the company is close to exit and does not plan on raising additional capital. In this case, the interim cash flows would be funded out of existing cash, and the cash considered at the liquidity event would be the expected residual cash. If additional financing is needed to reach the modeled exit scenarios, the capital structure used in the PWERM allocation should include both the future payoff amount for the debt (calibrated so that the expected value across all the scenarios equals today's fair value), as well as any future rounds of financing the company will need in order to reach that future exit. Because the details of these future financings are not known until the time to a liquidity event is short, the use of the PWERM for companies that still need more than one additional round of financing can be challenging. A best practice is to reconcile the probability-weighted present values of the future exit values to the overall equity value for the enterprise estimated, as discussed in chapter 5, to make sure that the overall valuation of the enterprise is reasonable.

6.26 In a PWERM framework, the backsolve method for inferring the equity value implied by a recent financing transaction involves selecting the future outcomes available to the enterprise, as described previously, and then calibrating the future exit values, the probabilities for each scenario, and the discount rates for the various equity securities such that value for the most recent financing equals the amount paid. Care should be taken to avoid unrealistic assumptions regarding the return to the preferred securities in the dissolution or low-value sale scenarios.⁷ Higher returns to the *senior securities* in the dissolution or low-value sale scenarios should be supported with evidence that the enterprise has assets that will continue to have value even if cash is exhausted, and current development plans are not successful.

6.27 The primary virtue of PWERM is its conceptual merit, in that it explicitly considers the various terms of the shareholder agreements, including various rights of each share class, at the date in the future that those rights will either be executed or abandoned. The method is forward looking and incorporates expectations about future economic events and outcomes into the estimate of value as of the present. The method is not a simple static allocation among shareholders of a single estimate of the enterprise's value as of the present. Finally, if the model is constructed using rational expectations

⁷ Venture capital data indicates that the average return to the investors in exits when the investor securities receive a return less than or equal to their original investment is between 15 percent and 25 percent of invested capital, depending on the round of the investment, and that the investors receive no value in approximately 35 percent to 45 percent of these exits. Therefore, when reconciling to a recent financing round in a PWERM framework, the upside scenarios must have a high enough return to offset these downside scenarios. See, for example, Andrew Metrick, *Venture Capital and the Finance of Innovation* (Hoboken, NJ: John Wiley & Sons, Inc., 2007).

and realistic assumptions, the ratio of preferred to common value that results from this method is typically not overly sensitive to changes in the probability estimates, except when one of the possible outcomes is assigned a very high probability.

6.28 The primary limitation of the PWERM is that it is complex to implement and requires detailed assumptions about potential future outcomes. Estimates of the probabilities of occurrence of different events, the dates at which the events will occur, and the values of the enterprise under and at the date of each event may be difficult to support objectively.⁸ The method may involve complex construction of probability models and might depend heavily on subjective management assumptions. In short, its attributes make it conceptually attractive, if not superior, but it may be expensive to implement, and the values it produces could be difficult to support using other means. In addition, because the PWERM typically considers only a specific set of discrete outcomes, rather than the full distribution of possible outcomes, the PWERM is not appropriate for valuing option-like payoffs, such as common stock options, profits interests, or warrants. Instead, an OPM or hybrid method should be used for valuing these securities.

6.29 Because future outcomes need to be explicitly modeled, the PWERM is generally more appropriate to use when the time to a liquidity event is short, making the range of possible future outcomes relatively easy to predict. For earlier-stage companies, it is possible to use a variant of the PWERM that focuses on the exit values on a per-share basis relative to the latest financing round (for example, considering the probabilities of achieving no return, less than 1 times the return, up to 1.5 times the return, up to 2 times the return, 2–5 times the return, 5–10 times the return, and 10 times the return or more). Data on the distribution of exit multiples for early-stage ventures by round of financing is available.⁹ Another approach that is appropriate for earlier-stage companies is a hybrid method that considers the expected equity value in various scenarios but that uses OPM to allocate the value within each of those scenarios. See paragraphs 6.48–54.

The OPM

6.30 The OPM treats common stock and preferred stock as call options on the enterprise's equity value, with exercise prices based on the liquidation preferences of the preferred stock. Under this method, the common stock has value only if the funds available for distribution to shareholders exceed the value of the liquidation preferences at the time of a liquidity event (for example, a merger or sale), assuming the enterprise has funds available to make a liquidation preference meaningful and collectible by the shareholders. The common stock is modeled as a call option that gives its owner the right, but not the obligation, to buy the underlying equity value at a predetermined or exercise price. In the model, the exercise price is based on a comparison with the equity value rather than, as in the case of a "regular" call option, a comparison with

⁸ Note that a hybrid model that uses an option pricing framework within each exit scenario or a simulation model might be used to take into account the variability of each of these inputs. This approach provides advantages of the PWERM framework while still capturing a full distribution of outcomes. See paragraphs 6.48–54.

⁹ *Ibid.* Care should be taken that the distribution of returns captures the full range of downside and upside scenarios and that the preferred stock value implied from the model reconciles to the recent round of financing.

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a per-share stock price. Thus, common stock is considered to be a call option with a claim on the equity at an exercise price equal to the remaining value immediately after the preferred stock is liquidated. The OPM has commonly used the Black-Scholes model to price the call option.¹⁰

6.31 The OPM considers the various terms of the stockholder agreements that would affect the distributions to each class of equity upon a liquidity event, including the level of seniority among the securities, dividend policy, conversion ratios, and cash allocations. In addition, the method implicitly considers the effect of the liquidation preference as of the future liquidation date, not as of the valuation date.

6.32 One of the critical inputs into the OPM is the total equity value for the enterprise. As discussed in chapter 5, this total equity value should be measured considering the cash flows under current ownership and the investors' required rate of return. This basis of valuation provides an indication of value for the securities that considers the degree of control and marketability for the securities held by the investors who in aggregate have control of the business, providing a consistent basis for comparison with the liquidation preferences for the preferred stock. Because the liquidation preferences for the preferred stock provide a threshold level of return for the investors before the common stock begins participating, option pricing models that treat the liquidation preferences as a strike price should take as their input the enterprise value that is consistent with the investors' required rate of return.

6.33 In an OPM framework, the backsolve method for inferring the equity value implied by a recent financing transaction involves making assumptions for the expected time to liquidity,¹¹ volatility, and risk-free rate and then solving for the value of equity such that value for the most recent financing equals the amount paid. This method is most appropriate when the financing transaction is an arm's-length transaction and *pari passu* with previous rounds. If the transaction is distressed or lacks the information and control rights that investors typically expect, it may be appropriate to make adjustments to the price prior to backsolving. See chapter 8, "Inferring Value From Transactions in a Private Company's Securities."

6.34 Unlike the PWERM, the OPM begins with the current equity or enterprise value and estimates the future distribution of outcomes using a lognormal distribution around that current value. Therefore, the OPM should incorporate the interim cash flows in the estimate of that initial equity or enterprise value. For example, in a discounted cash flow analysis, the cash flows in each period would reflect the revenues and costs in that period. For early-stage companies, these cash flows are typically negative for several periods, reflecting the company's investments in growth.

¹⁰ Option valuation methodologies are constantly evolving, and readers should be alert to which methodologies are considered preferable to others under various sets of facts and circumstances. Examples of option valuation methodologies that differ conceptually from the Black-Scholes model include path-dependent or lattice models, including simulation or binomial models. These types of approaches are required when valuing securities whose value depends on the evolution of the value of the company at interim periods (for example, securities with antidilution provisions or down-round protection).

For an illustration of a path-dependent model, see Travis Chamberlain and others, "Navigating the Jungle of Valuing Complex Capital Structures in Privately Held Companies: An Integrative Simulation Approach," *Journal of Business Valuation and Economic Loss Analysis* 2, no. 2 (2008).

¹¹ The expected time to liquidity is the probability-weighted average time to liquidity across all future exit scenarios and represents the expected time over which the enterprise value may evolve before the payoffs to the various classes of equity are resolved.

6.35 In general, because the OPM considers the evolution of the equity value without allowing for proceeds raised in additional financings, the allocation does not include the dilution impacts of any additional financings, nor the dilution impacts of any options and warrants that may be issued as the company progresses toward a future liquidity event. That is, even if the company has reserved a pool of options that may be issued to new and existing employees as the company progresses toward a successful liquidity event, only outstanding options and options that will be issued in the short term, irrespective of any changes in the company's value, are included in the allocation.¹²

6.36 The primary limitation of the OPM is that it assumes that future outcomes can be modeled using a lognormal distribution and that it is sensitive to certain key assumptions, such as the volatility assumption (one of the required inputs under the Black-Scholes model), that are not readily subject to contemporaneous or subsequent validation. Additionally, the lack of trading history for a privately held enterprise makes the subjectivity of the volatility assumption a potential limitation on the effectiveness of the method to estimate fair value. Key issues to consider in estimating the volatility are as follows:

- a. For early-stage companies, it is likely that the public guideline companies will be larger, more profitable, and more diversified; thus, the appropriate volatility may be best represented by the higher end of the range of comparables, especially for shorter time frames, migrating toward the median of small public companies over the longer term. If no direct competitors are small, high-growth companies, consider using a set of smaller companies from the broader industry to estimate the volatility.
- b. For later-stage privately held companies, consideration should be given to the effect of the company's leverage. Although many early-stage firms have limited, if any, debt, later-stage firms or those acquired in a leveraged buy-out may have significant debt financing, the effect of which can be to significantly increase the volatility of the firm's equity. For example, in a company with 75 percent debt, if the value of the company doubles, the value of equity increases by a factor of 5. The general relationship between equity value and asset value can be expressed as follows:

$$\text{Equity Value} = \text{Total Asset Value} \times N(d1) - \text{Book Value of Debt} \times \exp(-rT) \times N(d2)$$

In this equation, r is the risk-free rate, T is the time to liquidity, and $d1$ and $d2$ have their standard Black-Scholes definitions based on the asset's volatility. In addition, the relationship between equity volatility and asset volatility can be written as follows:

$$\text{Equity Volatility} = (\text{Total Asset Value} \times N(d1) \times \text{Asset Volatility}) / \text{Total Equity Value}$$

In a highly levered company, it is possible to solve for an asset volatility and equity volatility that satisfy both equations by treating the total asset value as the implied value of assets, given the

¹² More sophisticated lattice or simulation models that consider future financings and option issuances as a function of the change in value of the company over time are also feasible; however, the assumptions regarding the terms and conditions of future financing rounds may be speculative and difficult to estimate.

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company's leverage. This approach results in estimates of asset volatility that are internally consistent and better match market data.¹³

- c. An alternative approach is to use the firm's enterprise value as the underlying asset. Under this approach, the zero coupon bond equivalent of the debt¹⁴ is modeled as the first breakpoint, modeling the total equity as a call option on the enterprise value. In this approach, the volatility used should be the asset volatility, which would not be affected by the financial leverage. In theory, these two approaches should result in equivalent values. In some cases, however, the allocation of enterprise value instead of equity value may have the effect of shifting value from the senior equity securities to the junior equity securities because the liquidation preference for the senior equity securities is "sandwiched" between the debt and junior securities. (See paragraph 1.64 for further discussion.) In practice, rather than allowing the debt holders to claim the full enterprise value as is assumed when allocating enterprise value using the OPM, the controlling investors typically will begin a negotiation process with the debt holders prior to liquidation. Therefore, the task force believes that using the equity value as the underlying asset, considering the fair value of debt, as discussed in paragraphs 5.10–.21, provides a better indication of the relative value of the senior and junior equity securities.

6.37 It may also be difficult under the OPM to take into account the right and ability of preferred shareholders to early exercise (that is, to liquidate the firm earlier than anticipated), which can limit the potential upside to the common shares. The potential for early exercise is most appropriately modeled using a lattice or simulation model. Additionally, for early-stage firms, the next round of financing may be highly uncertain. Using a term in the OPM based on the expected time to exit, including the likelihood of dissolution in the short term, while still estimating the *discount for lack of marketability* based on the expected time to a successful exit may provide a more representative value for common stock in situations in which the company's ability to raise the next round of funding is highly uncertain.

6.38 In some cases, it may be appropriate to consider more than one scenario and run the option pricing model within each. For example, if the preferred stock has the right to both its liquidation preference and upside participation in a sale but is forced to convert upon a *qualified IPO*, it might be necessary to model the sale scenario (with unlimited participation) separately from the IPO scenario (with forced conversion at the qualifying IPO threshold).¹⁵ Another example in which this approach can be helpful is when a

¹³ Stanislava M. Nikolova, "The Informational Content and Accuracy of Implied Asset Volatility as a Measure of Total Firm Risk" (research paper, 2003).

¹⁴ The zero coupon bond equivalent of the debt is the future payoff amount for the debt such that the modeled value of the debt (the value allocated to the first breakpoint) equals its fair value. See paragraph 5.19.

¹⁵ Note that the IPO scenario in this example should be thought of as "aim-for IPO" rather than describing an IPO at a specific value. In this scenario, if the fair value of the company increases enough to reach the qualifying IPO threshold, then the preferred stock is forced to convert. If the fair value of the company declines or increases to less than the required threshold, then the model assumes that the company will accept a lower value exit (via a sale or sale of assets rather than an IPO), and the preferred stock will not be forced to convert.

new financing round is being negotiated, but the price depends on whether the company achieves certain milestones. See paragraphs 6.48–.54.

6.39 After allocating the equity value to the preferred and common stock, the valuation specialist should consider whether any additional discounts are appropriate (for example, discounts for illiquidity or lack of marketability). For example, preferred stock for early-stage companies is generally regarded as being more marketable than common stock. See chapter 7 for a discussion of these adjustments.

6.40 An advantage of the OPM is that it explicitly recognizes the option-like payoffs of the various share classes, utilizing information in the underlying asset (that is, estimated volatility) and the risk-free rate to adjust for risk by adjusting the probabilities of future payoffs. A disadvantage of the OPM is that it considers only a single liquidity event and, thus, does not fully capture the characteristics of specific potential future liquidity events (for example, IPO or sale) at various time horizons.

6.41 The OPM (or a related hybrid method) is the most appropriate method to use when specific future liquidity events are difficult to forecast. That is, the use of the method is generally preferred in situations in which the enterprise has many choices and options available, and the enterprise's value depends on how well it follows an uncharted path through the various possible opportunities and challenges.

The CVM

6.42 The CVM of allocation is based on first estimating equity value on a controlling basis, assuming an immediate sale of the enterprise, and then allocating that value to the various series of preferred stock based on the series' liquidation preferences or conversion values, whichever would be greater. The CVM is easy to understand and relatively easy to apply, thus making it a method frequently encountered in practice. However, the task force believes its use is appropriate mainly in two limited circumstances; see paragraph 6.46.

6.43 The fundamental assumption of this method is that the manner in which each class of preferred stockholders will exercise its rights and achieve its return is estimated based on the enterprise value as of the valuation date, not at some future date. Accordingly, depending upon the enterprise value and the nature and amount of the various liquidation preferences, preferred stockholders will participate in equity value allocation either as preferred stockholders or, if conversion would provide them with better economic results, as common stockholders. Convertible preferred stock that is "out of the money"¹⁶ as of the valuation date is assigned a value that takes into consideration its liquidation preference. Convertible preferred stock that is "in the money" is treated as if it had converted to common stock. Common shares are assigned a value equal to their pro rata share of the residual amount (if any) that remains after consideration of the liquidation preference of "out-of-the-money" preferred stock.

6.44 The principal advantage of this method is that it is easy to implement and does not require assumptions about future exits or the use of complex

¹⁶ Convertible preferred stock is "out of the money" if conversion to common stock would result in a lower value of the holdings of preferred stockholders than exercising the liquidation preference. Conversely, convertible preferred stock is "in the money" if conversion to common stock would result in a higher value of the holdings of preferred stockholders than exercising the liquidation preference.

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tools. The method assumes that the value of the convertible preferred stock is represented by the most favorable claim the preferred stockholders have on the equity value as of the valuation date.

6.45 However, this method often produces results that are highly sensitive to changes in the underlying assumptions. Another limitation of the method is that it is not forward looking and fails to consider the option-like payoffs of the share classes. That is, absent an imminent liquidity event, the method fails to consider the possibility that the value of the enterprise will increase or decrease between the valuation date and the date at which common stockholders will receive their return on investment, if any.

6.46 Because the CVM focuses on the present and is not forward looking, the task force believes its usefulness is limited primarily to two types of circumstances. The first occurs when a liquidity event in the form of an acquisition or a dissolution of the enterprise is imminent, and expectations about the future of the enterprise as a going concern are virtually irrelevant. The second occurs when an enterprise is at such an early stage of its development that (a) no material progress has been made on the enterprise's business plan, (b) no significant common equity value has been created in the business above the liquidation preference on the preferred shares, and (c) no reasonable basis exists for estimating the amount and timing of any such common equity value above the liquidation preference that might be created in the future.¹⁷ In situations in which the enterprise has progressed beyond that stage, the task force believes other allocation methods would be more appropriate. In particular, once an enterprise has raised an arm's-length financing round with one or more sophisticated financial investors, estimating the equity value using the backsolve method and then allocating that value using either OPM or PWERM provides a more reliable indication of the value of equity based on the future outcomes the investors expect the company may achieve. Thus, the task force believes that the CVM should not be used after venture capital has been raised.

6.47 Note that for simple capital structures, it is possible to allocate the enterprise value by directly estimating the fair value of any debt and debt-like preferred securities using the yield method, subtracting those fair values from the total enterprise value, then allocating the residual equity value pro rata to the common stock, as discussed in chapter 5. Unlike the CVM, the yield method is a forward-looking method that estimates the fair value of the debt and debt-like preferred securities, given the yield that investors would demand for these securities over the expected duration, considering the risk of the investment. See paragraphs 5.15–.18 for a discussion of the yield method. It would generally not be appropriate to use the CVM to value debt and debt-like preferred securities based on their recovery value.

Hybrid Methods

6.48 The hybrid method is a hybrid between the PWERM and OPM, estimating the probability-weighted value across multiple scenarios but using the OPM to estimate the allocation of value within one or more of those scenarios.

6.49 The hybrid method can be a useful alternative to explicitly modeling all PWERM scenarios in situations when the company has transparency into

¹⁷ See chapter 2, "Stages of Enterprise Development," for a discussion of the stages of enterprise development.

one or more near-term exits but is unsure about what will occur if the current plans fall through. For example, consider a firm that anticipates an 80 percent probability of an IPO in nine months; however, if the IPO falls through due to market or other factors, the chances for a liquidity event are much more uncertain, and the firm is expected to remain private for three years. Under these circumstances, it might be appropriate to use a hybrid of the PWERM and OPM. The value of the share classes under the IPO scenario might be based on the expected pricing and timing of the anticipated IPO, as described under the PWERM. Then, an OPM with a three-year time to liquidity might be used to estimate the value of the share classes, assuming the IPO does not occur. In this instance, the resulting share values under each scenario would be weighted by their respective probabilities.

6.50 Another example in which a hybrid method would be appropriate would be if the company is in negotiations with investors and expects to close a new financing round at \$4 per share in six months if it achieves a technical milestone, but if the financing does not occur, the company will likely close its doors. Under these circumstances, it might be appropriate to apply the backsolve method using the OPM to solve for the equity value and corresponding value of common stock based on the \$4 per share price for the new financing round. This common stock value would then be weighted by the probability of achieving the technical milestone and discounted at a risk-adjusted discount rate for six months to estimate the value of the common stock as of the valuation date.

6.51 Additional examples of situations in which a hybrid method would be appropriate were discussed previously in connection with the PWERM and OPM. See paragraphs 6.24*b* and 6.38.

6.52 In applying a hybrid method, the valuation specialist will typically use a different current equity value within each of the relevant scenarios. For example, suppose there is a 40 percent probability that the enterprise will obtain a contract with a major customer and will then be able to complete an IPO in one year and a 60 percent probability that the enterprise will not get this contract and will instead choose to exit via a sale in two years. In this situation, the equity value used as an input to the OPM for the IPO scenario would be higher than the equity value used as an input to the OPM in the sale scenario, and the overall current equity value would reflect the weighting between the two. Similarly, suppose the overall current equity value considering all the risks is \$50 million, but the valuation uses a hybrid method to explicitly model the 20 percent chance that the enterprise will not obtain financing. Furthermore, suppose that if the enterprise does not obtain financing, it will dissolve, returning \$5 million to the investors. In this situation, the equity value in the success scenario is higher than the overall enterprise value because the \$50 million equity value is the weighted average between the two scenarios. More specifically, the equity value in the success scenario would be \$61.25 million, calculated as the \$50 million overall equity value, less the value from the dissolution scenario (20 percent multiplied by \$5 million), divided by the probability of the success scenario (80 percent). A best practice is to reconcile the probability-weighted present values of the future exit values to the overall equity value for the enterprise estimated as discussed in paragraphs 5.03–.04 and 5.08, to make sure that the overall valuation of the enterprise is reasonable.

6.53 In a hybrid framework, it is still important to reconcile the preferred stock values to the most recent transaction (subject to adjustments, as

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described in chapter 8). This process involves developing the framework of the future scenarios, as described previously, and then calibrating the current equity values and probabilities for each scenario such that value for the most recent financing equals the amount paid.

6.54 An advantage of hybrid methods is that they take advantage of the conceptual framework of option pricing theory to model a continuous distribution of future outcomes and capture the option-like payoffs of the various share classes while also explicitly considering future scenarios and the discontinuities in outcomes that early-stage companies experience. A disadvantage is that these models require a large number of assumptions and may be overly complex.

Chapter 7

Control and Marketability

7.01 In standard valuation theory, enterprise value may be measured on a controlling or minority interest basis and on a marketable or nonmarketable basis. Therefore, adjustments to the enterprise value indicated by these valuation techniques may be needed when estimating the fair value of a minority interest in an enterprise.¹

7.02 In a valuation of a minority, nonmarketable interest in a privately held enterprise, the objective of the analysis is to value the securities within the enterprise rather than the enterprise itself (that is, the unit of account is a single share). Thus, when valuing a minority interest, it is most appropriate to consider the expected cash flows to the minority interest, given the enterprise's plans under current ownership. This value might not be the same as the fair value of the enterprise that would be used in an analysis that assumes an immediate sale of the enterprise, such as for impairment testing of goodwill under Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 350-20 in which the unit of account is the entire reporting unit. In particular, minority interest holders would not be able to change the capital structure for the enterprise nor would they be able to change the amount or timing of cash flows. See table 5-1 for some of the key differences between minority interest valuations and controlling interest valuations.

Controlling Versus Minority Interests

7.03 A controlling interest, subject to restrictive agreements, regulations, and state statutes, can exercise full rights of ownership regarding the management of an enterprise, including

- making investment decisions;
- appointing management;
- determining the amount of any special dividends paid; and
- liquidating, dissolving, selling, or recapitalizing the enterprise.

Conversely, a minority interest lacks the ability to exercise those rights.

7.04 In many cases, a *control premium* or an *acquisition premium*² is estimated based on the prices that third-party buyers may pay to acquire companies. Given the economics of supply and demand, a buyer who wishes to acquire control of an enterprise may have to pay a significant premium over the previous equilibrium price to incentivize current interest holders to sell. These premiums may be justified by the expected improvements to the cash

¹ It should be noted that the minority interest discussed in this guide is from the perspective of the holder. This is different from a noncontrolling interest (also sometimes referred to as minority interest) addressed in Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 810, *Consolidation*, which is from the perspective of the parent.

² As of the writing of this guide, the Appraisal Foundation is working on a project regarding the assessment and measurement of control premiums in valuations for financial reporting. The purpose of this project is to present views on how to approach and apply certain aspects of the valuation process appropriate for measuring the fair value of controlling interests in business enterprises for financial reporting purposes. Please refer to the Appraisal Foundation's website at www.appraisalfoundation.org for further information about this project and its status.

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flows, reductions in risk that buyers expect to achieve, or both.³ Valuation specialists frequently estimate the control premium that might be paid for an enterprise by observing the difference between public company multiples and the multiples paid in transactions.⁴

7.05 In a valuation of a minority, nonmarketable interest in a privately held enterprise, the objective of the analysis is to value the securities within the enterprise rather than the enterprise itself. Thus, the Equity Securities Task Force (task force) believes that the basis of valuation for the enterprise should be consistent with the amount that investors would pay for an interest in the enterprise, given the company's plans under current ownership, and the investors' required rate of return.⁵ In particular

- in the market approach (guideline public company method or guideline company transactions method), the multiple selected would reflect the differences between the enterprise and the guideline companies, given the company's plans under current ownership. It would not include any additional acquisition premium that a third party buying the entire enterprise might pay.
 - In some situations, the value of the enterprise for the purpose of valuing a minority interest would be the same as the fair value of the enterprise. For example, suppose that a private equity firm acquires control of an enterprise for 10 times the last 12 month (LTM) earnings before interest, taxes, depreciation, and amortization (EBITDA),⁶ but the median multiple observed for the selected comparables in the guideline public company method is 8 times the LTM EBITDA. This difference may reflect the improvements to the business that the enterprise is expected to make under the new ownership. Because minority interest holders would also benefit from these improvements to the business, to value

³ The owners of an enterprise may increase enterprise value by improving the cash flows directly (for example, by increasing revenues; reducing operating costs; or reducing nonoperating costs, such as taxes). The owners of the enterprise may also increase enterprise value by reducing risk (for example, by diversifying the business, improving access to capital, increasing the certainty of cash flows, or optimizing the capital structure). Both of these approaches may be used to justify the premiums paid in transactions.

⁴ For example, the *Mergerstat Review* provides statistics and analysis of mergers and acquisitions for U.S. companies, segregated by industry. However, note that these statistics reflect averages over a wide range, and the actual premium paid in any given transaction depends upon the negotiation dynamics. When estimating an acquisition premium for a specific company, it is important to consider the characteristics of the likely market participants and the level of improvements to the cash flows and synergies available to these market participants. Synergies available to only one potential acquirer typically should not be included in the estimated control premium because it would be difficult for the sellers to capture the value of these synergies in the negotiation process. It is also important to note that control premiums are observed only for companies that are acquired. The vast majority of companies are not acquired in any given year. Thus, the companies that are acquired may represent a sample in which higher levels of improvement are possible, resulting in higher observed control premiums than would otherwise be the case.

⁵ As discussed in paragraph 5.02, most privately held companies have investors who in aggregate have control of the enterprise. When valuing the minority securities within an enterprise, it is appropriate to consider these investors' required rate of return.

⁶ Note that, for simplicity, this example refers only to last 12 month multiples of earnings before interest, taxes, depreciation, and amortization (EBITDA). In practice, a valuation should consider other relevant indications of value (for example, forward multiples, multiples of other metrics, and the income approach).

any minority interests immediately following the transaction, it would be appropriate to consider the 10 times the LTM EBITDA multiple in estimating the value of the enterprise for the purpose of valuing the minority interest. That is, it typically would not be appropriate to back out a 25 percent acquisition premium to estimate the enterprise value for the purpose of valuing the minority interests.⁷

- In other situations, however, the value of the enterprise for the purpose of valuing a minority interest may be different from the fair value of the enterprise, assuming an immediate sale of the enterprise. For example, suppose that two years after the initial acquisition, the enterprise has realized the planned improvements to EBITDA, and the expected future growth and profitability are now generally consistent with the growth and profitability levels of the selected comparables. Based on the company's plans under current ownership, the expected time to a liquidity event is still three years away. In that case, in estimating the value of the enterprise for the purpose of valuing the minority interest, it may be appropriate to use a multiple based on the comparables without adjustments. That is, after considering adjustments for differences in size, growth, and profitability, the valuation specialist may conclude that the enterprise is similar to the selected comparables and that no adjustments are required. In contrast, in estimating the fair value of the enterprise, assuming an immediate sale, the valuation would instead consider whether a third party buying the entire enterprise might pay an acquisition premium corresponding to the improvements in the cash flows or reductions in risk that the third-party buyer might achieve.⁸
- in the income approach (discounted cash flow method), the projected cash flows for the purpose of valuing a minority interest would reflect the cash flows under current ownership, including any expected improvements in the cash flows or other changes that an investor in a minority interest would consider and be willing to pay for. It would not include any additional buyer- or entity-specific synergies or other improvements to value that a particular third party buying the entire enterprise might realize.
 - For example, suppose that an enterprise pays a fee to the manager of a private equity firm. In estimating the enterprise value for the purpose of valuing a minority interest, that fee would be included as a cost in the cash flows. On the other hand, the cash flows would also include the improvements that the private equity firm is

⁷ The valuation for the minority interests may then be adjusted for differences in risk attributable to lack of control and lack of marketability, if appropriate. See paragraphs 7.11–33.

⁸ See also example 2 in appendix I, "Illustration of Methods for Valuing Equity Securities," describing the valuation of a private equity-backed leveraged buyout.

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expecting to make to the business (including company-specific synergies).

- In addition, when assessing the value of a minority interest, the discount rate selected would reflect the cost of debt and cost of equity for the enterprise, given the capital structure under current ownership, rather than assuming that a new third party buying the entire enterprise would put a new capital structure in place. For example, in a highly levered company, the company-specific cost of debt (current market yield) may be much higher than the typical cost of debt for the industry, leading to a higher overall cost of capital.
- In contrast, in estimating the fair value of the enterprise on a controlling basis (that is, in an immediate sale scenario), the valuation would instead consider the cash flows that a third party buying the entire enterprise would expect (excluding buyer-specific synergies but including synergies that would be available to multiple buyers) and the expected cost of capital for the enterprise after acquisition.

7.06 In short, the task force believes it is not appropriate to include a control premium or an acquisition premium in the enterprise value used in valuing the minority interest securities within the enterprise, except to the extent that such a premium reflects improvements to the business that an investor in a minority interest would expect under current ownership.

7.07 The value of the enterprise for the purpose of valuing the minority interest should also consider the value that might be realized for the enterprise upon a liquidity event, if any. If the enterprise has no plans to be sold or go public,⁹ a minority interest holder would not be able to realize any premium that a third-party buyer might pay to acquire or gain control of the enterprise. If the enterprise ultimately plans to be sold or go public,¹⁰ a minority interest holder will ultimately participate in this liquidity event. Thus, in this case, when valuing a minority interest, it may be appropriate to value the equity on a minority basis through the future liquidity event and to consider the value of the minority interest based on its share of the cash flows leading up to, and to be realized upon, the future liquidity event (whether on a controlling basis via a strategic sale or a minority basis via an initial public offering [IPO]). That is, if investors in a minority interest would expect to realize a synergistic premium at exit (for example, if multiple strategic buyers would be expected to bid up the price), this exit premium would be appropriately included in the fair value of the enterprise used for estimating the value of the minority interests.¹¹

⁹ For example, a family-owned or other closely held business or partnership without private equity or venture capital backing might plan to remain private for the indefinite future.

¹⁰ For example, almost all successful private equity-backed and venture capital-backed companies are ultimately sold or taken public so that the investors can realize the return on their investments.

¹¹ Note that this discussion focuses on the intent of the enterprise because a minority interest holder cannot influence the company's plans under current ownership. Therefore, when assessing the assumptions that a market participant investing in a minority interest would make about the business, it is appropriate to consider the information that such an investor would possess after completing a due diligence process. In most cases, these assumptions will be consistent with the plans of the enterprise under current ownership.

7.08 The investors in an enterprise who in aggregate have control of the business have a greater degree of influence over the company's operations and future exit strategy than minority interest holders, even if no one investor has strict control.¹² However, both the investors and minority interest holders may participate in the future exit event, differentiated only by the rights and preferences of each security in the capital structure. In a simple capital structure, both the investors and minority interest holders share pro rata in the proceeds from a sale, or they may realize the traded share price on or after an IPO.

7.09 Until the future liquidity event, when valuing both the investors' securities and other securities, the cash flows should be estimated on a minority basis. That is, the cash flows should reflect the company's plans under current ownership. Because the investors' plans are already considered in developing the forecast, and minority interest holders cannot change those plans, there is no difference in the enterprise cash flows used in valuing the investors' securities and other securities.

7.10 Beyond the future liquidity event, the assumptions that a market participant investing in a minority interest would make regarding the cash flows or expected exit multiple should be used. The post-exit cash flows or selected future exit multiple may incorporate expected improvements to the business under new ownership or synergies that the company may achieve in conjunction with the acquirer if investors in a minority interest would assume that the company would be able to capture a portion of these synergies in their negotiations for a sale of the company at the future liquidity event. If investors in a minority interest would not assume such a premium would be paid for the company at exit, the post-exit cash flows should not be adjusted for expected post-exit improvements under an income approach. Similarly, under a market approach, the multiples and financial metrics would not reflect an acquisition premium.¹³ Depending on the circumstances, it may be appropriate to place some weight on both types of exit. Regardless of the type of exit expected, because both the investors who in aggregate have control of the business and investors in minority interests will share in the same future exit values, there is no difference in the enterprise value used in valuing the investors' securities and other securities.

7.11 Even though the enterprise value used in valuing the securities held by the investors who in aggregate have control of the business and the other securities in the enterprise is the same, the value of the securities themselves may differ. The two types of disproportionate returns that investors typically enjoy are as follows:

- a. The investors' securities include explicit economic rights, such as a liquidation preference or preferred dividends, that provide disproportionate returns over the other securities. These types of returns can be modeled in the models for valuing equity securities in complex capital structures, as described previously.

¹² An investor who holds 50 percent or more of the equity has access to different exit markets than the minority interest holders, and in many cases, the sale of such an interest would trigger a liquidity event. The valuation of such controlling interests is outside the scope of this guide.

¹³ Note that although an initial public offering (IPO) results in the sale of shares on a minority basis, IPO multiples may be higher than the average public company multiples or comparable transaction multiples, perhaps due to market participants' view of the growth potential for newly public companies, as well as the tremendous marketing efforts in the company's road show leading up to an IPO.

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- b. The investors have significant influence over the enterprise, including control over the timing of exit and the negotiations for future financing rounds, that provides the investors with optionality that the holders of other securities lack. These types of returns are more difficult to model.

7.12 There is no question that venture capital and private equity investors value the ability to influence the operations of an enterprise, and many investors will not consider investments in which they do not have this level of influence. To a large extent, this difference in value may be captured by modeling the explicit rights and preferences of the investors' securities, as described previously; thus, the task force believes that, in many cases, the discount for lack of control would be minimal.¹⁴ However, to the extent that the difference in value between the investors' securities and the other securities cannot be modeled in the cash flows (for example, due to issues such as those described in paragraph 7.11b), the task force believes it may be appropriate to apply a discount to the other securities to capture the difference in level of influence between different classes of securities.

7.13 The most common method for estimating a discount for lack of control uses the inverse of the acquisition premium observed in transactions, as discussed in paragraph 7.04.¹⁵ However, the task force believes these premiums overstate the "pure" difference in value attributable to the difference in the level of influence between investors' securities and other securities because the control premiums measured in merger and acquisition studies include synergies and reflect transaction dynamics at the enterprise value level.

7.14 In summary, as discussed in paragraphs 7.07–.11, when valuing minority interests in an enterprise (including investor securities that lack control), the enterprise value would be measured considering the company's cash flows under current ownership, the company's plans for a future liquidity event (if any), and the premium (if any) that investors in a minority interest would expect to be realized upon the future liquidity event (whether via a sale or an IPO). The enterprise value would not include a significant control or acquisition premium, unless investors in a minority interest would pay such a premium for an interest in the enterprise under current ownership (that is, when the expected improvements to the cash flows or reductions in risk under current ownership justify such a premium relative to the selected comparable companies). After measuring the enterprise value on this basis, it is unnecessary to back out a premium in estimating the fair value of the minority interests.¹⁶

¹⁴ A frequent example supporting the position that the discount for lack of control is minimal occurs in private equity investments when the *lead investor* retains control, but *tag-along investors* pay the same price per share. On the other hand, this example could be considered a special case when the tag-along investors have sufficient respect for the lead investor that they are willing to forgo control in order to benefit from the lead investor's management skills.

¹⁵ Using this method, the discount for lack of control would be measured as $1 - (1 / (1 + \text{control premium}))$.

¹⁶ If investors would pay a significant control or acquisition premium for an interest in the enterprise today, even though the expected liquidity event is some time into the future, that premium should be considered in estimating the fair value of the minority securities, as well. These premiums are typically justified by the expected improvements to the business under the new ownership. The discount for lack of control that may apply to the minority securities relative to the investor securities should capture only the differences in risk described in paragraph 7.12.

7.15 One possible proxy for the difference in value attributable to the difference in the level of influence between the securities held by the investors who in aggregate have control of the business and the other securities in the enterprise is the difference in value between voting and nonvoting stock. Although both voting stock and nonvoting stock are minority interests, voting stock has the ability to influence the operations of the company, whereas nonvoting stock does not. Because both voting and nonvoting stock are minority interests, however, this proxy is not exact. Market discounts between voting and nonvoting stock are relatively small.¹⁷

Marketable Versus Nonmarketable Interests

7.16 Lack of marketability detracts from a security's value when compared to a security that is otherwise comparable but readily marketable. For two given investments identical in all other respects, market participants will apply a downward adjustment to the value of the one that cannot be readily converted into cash versus the one that can be readily converted into cash. A *nonmarketable investment* is one that lacks a ready market; an *illiquid investment* is one in which a market exists, but the investment is not actively traded, or restrictions on the investment prevent access to that market. For example, a private enterprise is marketable (there is a market) but illiquid (there is no active market). A typical minority interest in a private enterprise is nonmarketable.

7.17 As discussed in chapter 9, "Relationship Between Fair Value and Stages of Enterprise Development," and chapter 10, "Valuation Implications of a Planned Initial Public Offering," venture capital and private equity investors have historically demanded and achieved higher returns than investors in public capital markets.¹⁸ These expected returns are reflected in the discount rates that are appropriate in the income approach and in the lower than average multiples of projected revenues or projected earnings that may be appropriate in the market approach (guideline public company method or guideline company transactions method).¹⁹

7.18 Because the enterprise value is defined in terms of the cash flows to the investors who in aggregate have control over the business, the investors' securities and the enterprise as a whole can be considered to be equally marketable. In particular

¹⁷ Based on studies and articles available through Business Valuation Resources, discounts between voting and nonvoting shares, on a minority interest basis, are typically concentrated between 3 percent and 5 percent. The March 2009 *BVResearch* provides a comprehensive summary of the various studies.

¹⁸ The investors' required rate of return also reflects the high risk of these investments. Venture capital investments are risky because of the nature of early-stage companies; historically, private equity investments have created a similar risk profile through high leverage. Because, on average, the market is risk averse, investors in high-risk companies can achieve higher than market returns.

¹⁹ For most venture capital-backed and private equity-backed companies, projected revenue and earnings growth exceed industry levels. Thus, even though the values of these companies typically reflect lower than average multiples of projected revenues or earnings, these same values also may reflect average or above average multiples of current revenues and earnings. For example, an early-stage company may have almost no current revenue, whereas a large private equity-backed company in a turnaround situation may have low earnings that are expected to improve under new management. In both of these examples, the value of the companies would reflect a high current multiple (escalating rapidly as revenues or EBITDA approach zero).

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- both investors' securities and the enterprise as a whole are harder to sell than a share of stock traded on an exchange, but they are easier to sell than minority interest in the enterprise. Although transactions between investors or sales of an enterprise early in the investment cycle are rare, they do occur.
- the investors who in aggregate have control over the business typically have access to information that would allow them to take potential buyers through a due diligence process, making it possible to access an exit market for either the investors' securities or the enterprise as a whole.

7.19 Considering these factors, the task force believes it is most appropriate to consider the enterprise and investors' securities as equally marketable investments and to value them as such. The task force does not believe it is appropriate to value the enterprise as though it were a fully liquid asset and then apply a discount for lack of marketability to the enterprise value or investors' securities to account for the higher rate of return these investors demand. For example, in estimating the measurement date fair value of equity to be used in valuing the shares within a simple capital structure (as described in chapter 5, "Valuation of Equity Securities in Simple Capital Structures") or in the various methods for valuing equity securities within a complex capital structure (as described in chapter 6, "Valuation of Equity Securities in Complex Capital Structures"):

- In the income approach, the valuation specialist should discount the cash flows at a discount rate corresponding to investors' required rate of return²⁰ rather than at the lower rate that might be appropriate in the public capital markets.
- In the market approach, the valuation specialist should select multiples that are appropriate to the enterprise, considering the investors' required rate of return, given the size, expected growth, and profitability for the private company, versus the public capital market's required rate of return, given the size, expected growth, and profitability of the selected public comparables.

7.20 In a simple capital structure, both investors and minority interest holders have the same securities. Therefore, to the extent that these minority interest holders have the same rights (tag along, drag along, repurchase, and so on) and same principal exit market, the value of the securities would be the same for both investors and minority interest holders. However, if the minority interest holders have a different principal exit market or additional restrictions on their interests that investors do not, it may be appropriate to apply a discount for lack of marketability to these securities, as discussed subsequently.

7.21 In a complex capital structure, junior securities are typically less marketable for the following reasons:

- In general, the holders of junior securities are not privy to the same level of information that is available to the senior securities

²⁰ As discussed in paragraph 5.02, most privately held companies have investors who in aggregate have control of the enterprise. When valuing the minority securities within an enterprise, it is appropriate to consider these investors' required rate of return.

and, thus, do not have the same level of access to potential buyers.²¹

- Furthermore, in many cases, *junior security* holders contractually may not hedge or diversify their investments, making them more sensitive to risk.

7.22 Considering these factors, the task force believes that after allocating the equity value to the various securities within the enterprise, it may be appropriate to apply a discount for lack of marketability to the junior securities.

7.23 As discussed in chapter 5, for the purpose of valuing the minority interests within the enterprise, the total enterprise value is measured considering the cash flows under current ownership and the required rate of return of the investors who in aggregate have control of the business. Therefore, when estimating the discount for lack of marketability for the junior securities, it is appropriate to consider the degree of illiquidity of these securities relative to the degree of illiquidity already incorporated into the valuation of the enterprise. See also paragraph 7.33 and Q&A 12.12–12.15.

7.24 As discussed in the following paragraphs, there are many quantitative and qualitative methods for assessing a discount for lack of marketability. The most popular quantitative methods estimate the discount as a function of the duration of the restriction (time) and the risk of the investment (volatility). In most cases, the researchers developing each method then validated their results via a regression analysis using data from restricted stock placements.

7.25 A valuation specialist considers a number of factors in estimating the size of any *marketability discount* for a minority interest. For example, these include²²

- prospects for liquidity (that is, expectations of a market in the future. The greater the prospects, the lower the discount would tend to be).
- number, extent, and terms of existing contractual or customary arrangements requiring the enterprise to purchase or sell its equity securities. Impact on the size and direction of any marketability adjustment will vary, depending on the nature of the arrangements.
- restrictions on transferability of equity securities by the holder. The lesser the extent and duration of any such restrictions, the lower the discount would tend to be.²³
- pool of potential buyers. The larger the pool, the lower the discount would tend to be.

²¹ When estimating the discount for lack of marketability to be combined with an explicit discount for lack of control, it is important not to double count. Many of the factors that make investor securities more marketable than minority securities are attributable to the control rights associated with these securities.

²² A number of studies have been conducted on factors influencing marketability discounts. See footnotes 1 and 2 in paragraph 10.04.

²³ For example, if the company or its investors customarily repurchase shares from employees who leave the company, without consideration of any discounts for lack of marketability or control, it would be harder to support the application of these discounts.

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- risk or volatility. The lower the perceived risk of the securities or the lower the volatility of the value of the securities, the lower the discount would tend to be.
- size and timing of distributions. The greater the amount of dividends paid to the securities, the lower the discount would tend to be (typically not a factor for early-stage enterprises but possibly a factor for more mature enterprises).
- concentration of ownership. The higher the concentration of ownership (for example, among founders or one or two investors), the higher the discount would tend to be.

7.26 When considering the duration of the restrictions, it may be appropriate to estimate the discount for lack of marketability based on the full time to liquidity, considering only successful exits (in which the common stock ultimately realizes a nonzero value), rather than the expected time to liquidity, considering all exits, including dissolution (in which the common stock ultimately does not have value). In the case of an IPO, it may also be appropriate to consider the fact that although the IPO provides liquidity to the company's freely traded shares, it may not provide liquidity to all of the shareholders because some shares may also be subject to post-IPO restrictions. If the post-IPO restrictions are an attribute of the security rather than an attribute of the holder, the valuation specialist should consider the impact of these additional restrictions on the value of the security.²⁴ If the post-IPO restrictions apply only to certain shareholders and are not an attribute of the security, then based on guidance in paragraphs 17–19 of FASB ASC 718-10-30, these restrictions may not be considered in estimating the fair value of the security. In contrast, the tax courts have historically accepted methodologies that consider the characteristics of the holder in estimating the fair market value of the security.

7.27 One source of empirical data that can be helpful in understanding the nature of the potential adjustment attributable to a lack of marketability is transactions in the restricted stock of publicly traded companies. *Restricted stock* is the stock of a public company that is identical in all aspects to the freely traded stock of the company, except that it is restricted from trading on the open market for a certain period of time. The duration of the restrictions varies, but most restrictions typically lapse after 12 months, or 24 months in older studies. The median discount observed in these studies ranges from 13 percent to 45 percent.²⁵ The factors that appear to be most significantly correlated with observed discounts in restricted stock transactions are the underlying volatility of the stock, the restriction period of the stock in the transactions, and the size of the block being sold as a percentage of shares outstanding. The task force does not endorse applying discounts for lack of marketability based solely on references to studies; rather, each situation should be evaluated based on its individual facts and circumstances.

²⁴ Note that as discussed in paragraph 1.06, Securities and Exchange Commission Rule 144A restrictions are not considered under FASB ASC 718, *Compensation—Stock Compensation*, because they are not prohibitions on sale.

²⁵ Independent studies of restricted stock transactions are reported in Shannon P. Pratt's *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, 5th ed. (New York: McGraw-Hill, 2007), and Shannon P. Pratt's *Business Valuation Discounts and Premiums* (Hoboken, NJ: John Wiley & Sons, Inc., 2009). Additional articles on the restricted stock studies are found in the September 2001, December 2001, and December 2002 editions of *Business Valuation Review*.

7.28 Another set of empirical data that is used to estimate implied discounts for lack of marketability is the price a stock exhibited in private transactions prior to an IPO when compared to the publicly traded price subsequent to the public offering. Studies using this data have indicated an average downward adjustment of between 21 percent and 66 percent from 1980 to 2002.²⁶ However, because only successful IPOs are tracked in the study, this data may reflect a sample bias. Furthermore, because much of the underlying "transaction" data is based on stock option grants rather than actual sales of stock, the data may not accurately reflect arm's-length prices. Finally, even the most recent studies are based on transactions and IPOs that are at least several years old. Therefore, reliance on these studies has diminished in current valuation practice. Furthermore, as noted previously, when applying discounts for lack of marketability, it is important to evaluate individual facts and circumstances and not rely solely on references to studies.

7.29 Given the wide range of observed discounts for lack of marketability in various studies and the sensitivity of these discounts to the duration of the restriction and the expected risk (volatility) of the investment, several quantitative methods have been developed to estimate the discount for lack of marketability for privately held securities. The following list contains descriptions of the three foundational methods:

- a. *Protective put.*²⁷ The protective put method for estimating a discount for lack of marketability was first described by David Chaffe in 1993, and it serves as the foundation for other option-based methods. In this method, the discount is estimated as the value of an at-the-money put with a life equal to the period of the restriction, divided by the marketable stock value. Intuitively, by purchasing an at the-money put option, the buyer guarantees a price at least equal to today's stock price, thus creating liquidity. However, as Aswath Damodaran points out, "liquidity does not give you the right to sell a stock at today's market price anytime over the next 2 years. What it does give you is the right to sell at the prevailing market price anytime over the next 2 years."²⁸ In practice, because it is not possible to hedge illiquid securities, the protective put method should not be considered to represent an actual transaction but rather, to represent a reasonable regression-based fit to the discounts observed in restricted stock data. To validate the model, Chaffe evaluated the results by calculating the discounts for volatilities in a range of 60 percent to 90 percent.²⁹ For a holding period of two years and volatilities of 60 percent to 90 percent, the protective put method gives discounts comparable to those cited in restricted stock studies. This method is still widely used.

²⁶ Atulya Sarin, Sanjiv R. Das, and Murali Jagannathan, "The Private Equity Discount: An Empirical Examination of the Exit of Venture Backed Companies" (working paper, Santa Clara University—Department of Finance, January 2002).

²⁷ David B. Chaffe, "Option Pricing as a Proxy for Discount for Lack of Marketability in Private Company Valuations," *Business Valuation Review* 12 (December 1993): 182–88.

²⁸ Aswath Damodaran, "Marketability and Value: Measuring the Illiquidity Discount," *Stern School of Business (July 2005)*: 41.

²⁹ The majority of companies have volatilities in the 30 percent to 50 percent range. Companies with volatilities of 60 percent to 90 percent or higher tend to be smaller, less diversified enterprises or in riskier industries, such as high tech and biotech. Highly levered companies or the common stock in companies with high liquidation preferences will also have high volatilities, often exceeding 100 percent.

- b. *Longstaff*.³⁰ In 1995, Francis Longstaff published an article in the *Journal of Finance* that describes an upper bound on the discount for lack of marketability based on a "look back" option. Intuitively, in a liquid security, an investor with perfect market timing ability would sell the security when the value is highest. Longstaff also correlated his results to restricted stock studies using a volatility input of 10 percent for low volatility companies and 30 percent for high volatility companies. The Longstaff model provides a wide upper bound because an average investor will possess imperfect market timing ability; therefore, the investor is unlikely to attain the maximum value of the security. Thus, the task force believes it is generally not a reasonable method for estimating discounts when used with observed market volatilities because the upper bounds do not correlate well with observed market discounts and, in fact, rise in excess of 100 percent for high volatility securities with long restriction periods.
- c. *Quantitative marketability discount model (QMDM)*.³¹ The QMDM, developed by Chris Mercer, is an income approach technique for estimating discounts for lack of marketability that assumes that investors in illiquid securities require higher rates of return than investors in liquid securities. The discounts derived from the QMDM are driven by the inputs to the model; thus, there is no typical range of discounts observed using this model. The QMDM is most appropriate for directly valuing a nonmarketable minority interest in an entity with a simple capital structure. (See paragraph 7.20.) Accordingly, alternative methods may be better suited for entities with complex capital structures. In addition, because the discounts estimated by QMDM increase approximately linearly with time, caution should be exercised in applying QMDM when long holding periods are assumed.

7.30 Because the Longstaff method generally does not provide a reasonable estimate for the discount for lack of marketability, and the QMDM is more applicable for directly valuing a minority interest in an entity with a simple capital structure, the most widely accepted of these methods is the protective put method. This method has also spawned a plethora of successors, of which the most popular are the Finnerty method, Asian protective put method, and differential put method:

- a. *Finnerty*.³² Building on these previous models, in 2001, John Finnerty proposed a model that assumes the investor does not possess special market timing ability and would be equally likely to exercise the hypothetical liquid security at any given point of time. The value of marketability is modeled as the present value of cash flows, similar to an average-strike put option. The Finnerty

³⁰ Francis A. Longstaff, "How Much Can Marketability Affect Security Values," *The Journal of Finance* 50 (December 1995): 1767–74.

³¹ Z. Christopher Mercer and Travis W. Harms, *Business Valuation: An Integrated Theory*, 2nd ed. (Hoboken, NJ: John Wiley & Sons, Inc., 2008).

³² John D. Finnerty, "An Average-Strike Put Option Model of the Marketability Discount," *The Journal of Derivatives* 19 (Summer 2012): 53–69. Note that previous versions of this paper include an error in the formula for the discount and should not be relied on. Also, note that Finnerty is continuing to refine and adapt his model, conducting further research to address some of the shortcomings mentioned in this chapter. Please check for the latest updates before using this method.

method addresses the issue of assuming perfect market timing in the Longstaff method and the issue of assuming protection on the downside while still realizing appreciation on the upside in the protective put method. Finnerty also performed a regression analysis to restricted stock studies, adjusting to remove other significant factors, such as concentration of ownership and information effects, and found that after isolating the marketability-related factors, the discounts predicted by his method are consistent with the data. Finnerty presented an updated version of his model at the American Society of Appraisers' Advanced Business Valuation conference in October 2009.

- b. *Asian protective put*.³³ The Asian protective put is a variant of the protective put method that estimates the discount based on the average price over the restriction period rather than based on the final price. This method is conceptually similar to the Finnerty method but is estimated as an average price Asian put (which measures the difference between the current price and average price over the holding period) rather than an average strike Asian put (which measures the difference between the average price over the holding period and the final price). The discounts predicted by this method are uniformly lower than those for the protective put, are lower than the Finnerty method for low volatility stocks, and are higher than the Finnerty method for high volatility stocks.
- c. *Differential put*.³⁴ The differential put is a variant of the protective put that estimates the discount based on the difference between the protective put discount that would be estimated for the preferred stock and the protective put discount that would be estimated for the common stock, estimating the volatility for the each series of stock based on the preferred stock liquidation preferences, as discussed in paragraph 7.32, and using a time to liquidity appropriate to each series of stock (for example, the time to the next financing round for the preferred stock and the time to the ultimate liquidity event for the common stock). This method is conceptually appealing because the discount is largest for early-stage companies, in which the preferred stock liquidation preferences represent a high percentage of the equity value, and lowest for companies approaching an IPO, in which the preferred stock will be converted to common stock. However, no research has yet been performed to understand how these discounts vary with volatility or the duration of the restriction period.

7.31 Estimating a discount for lack of marketability is challenging, and none of these methods is completely satisfactory in all respects. All put-based

³³ Although several practitioners have adopted this method, the Equity Securities Task Force is not aware of any formal research to explore the relationship between the Asian put and restricted stock studies. The following papers provide an explanation of Levy's method for approximating the Asian put discount in closed form and an overview of the Asian put more generally:

- David LeRay, "Efficient Pricing of an Asian Put Option Using Stiff ODE Methods" (master's project, Worcester Polytechnic Institute, May 2007).
- John C. Hull, *Options, Futures and Other Derivatives*, 7th ed. (Upper Saddle River, NJ: Pearson Prentice Hall, 2009), 556–58.

³⁴ Stillian Ghaidarov, "The Use of Protective Put Options in Quantifying Marketability Discounts Applicable to Common and Preferred Interests," *Business Valuation Review* 28, no. 2 (2009).

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methods share the conceptual shortcoming that purchasing a put is not equivalent to purchasing marketability alone because it also limits the downside risk while leaving the upside potential. That is, these methods focus on the cost of buying a put without capturing the fact that to lock in today's price, the security holder would also have to sell a call. If it were feasible to hedge the nonmarketable security, a more appropriate hedge might be to sell a forward contract, which might imply a discount for lack of marketability closer to the risk-free rate.³⁵ In addition, none of the models consider that even with such a hedge, the interest may still be illiquid. The strength of these put-based methods is that they appropriately capture the relationship between the duration of the restriction (time) and risk (volatility), and they have been correlated with the limited observable market data.

7.32 A key input into all these methods is the volatility of the common stock. In cases in which the preferred stock is entitled to a liquidation preference before the common stock begins participating, the common stock is more leveraged and, hence, has higher volatility than the overall equity volatility. Following Merton's formulation, the relationship between equity volatility and asset volatility can be written as follows:

$$\text{Equity Volatility} = \text{Asset Volatility} \times (\text{Asset Value} \times N(d1)) / \text{Equity Value}$$

Therefore, the volatility for each class of equity³⁶ is estimated as follows:

$$\text{Class Volatility} = \text{Equity Volatility} \times (\text{Equity Value} \times \text{Class } N(d1)) / \text{Class Value}$$

where

$$\text{Class } N(d1) = \text{Sum (Incremental } N(d1) \text{ Value by Breakpoint} \\ \times \text{Class Allocation by Breakpoint)}$$

For example, in a situation with one class of convertible preferred stock with a liquidation preference of \$20 million and 40 percent ownership on an as-converted basis

$$\text{Common } N(d1) = 100\% \times (N(d1 @ \$20 \text{ million}) - N(d1 @ \$50 \text{ million})) \\ + 60\% \times (N(d1 @ 50 \text{ million}))$$

It is theoretically appropriate to use the levered common stock volatility in estimating the discount for lack of marketability for the common stock.³⁷

7.33 Because the data used in Chaffe's analysis was not adjusted for effects unrelated to marketability, such as concentration of ownership and

³⁵ Empirically, observed discounts for lack of marketability are higher than the risk-free rate, so the fact that it is not feasible to hedge a nonmarketable security suggests that a forward contract is generally not the right model for these discounts.

³⁶ Neil J. Beaton, Stillian Ghaidarov, and William Brigida, "Option Pricing Model," *Valuation Strategies*, November–December 2009.

³⁷ In practice, most valuation specialists use the overall equity volatility for estimating the discount for lack of marketability for the common stock and also for estimating the value of the common stock options for financial reporting. If the levered common stock volatility is used in estimating the discount for lack of marketability, for consistency, the levered common stock volatility should also be used in estimating the fair value of any common stock options. For example, for early-stage companies, the value of the stock options may be quite close to the value of the common stock itself because in the success scenarios, the small strike price associated with the options is negligible compared to the final price realized.

information access, discounts estimated using the protective put method may be regarded as capturing the discount applicable to both lack of marketability as well as lack of control or other factors. Other put-based methods, such as the Finnerty method and Asian protective put method, attempt to isolate the "pure" discount for lack of marketability, which may be regarded as incremental to the degree of illiquidity for the controlling investors' securities. Similarly, the differential put method attempts to isolate the incremental discount for the common stock relative to the degree of illiquidity already incorporated into the equity valuation. The task force expects further improvements in this area as research continues, particularly with the advent of new sources of market data, as some private companies set up secondary markets for their employees. The valuation specialist should consider further developments and apply an appropriate method when the valuation is performed.

Chapter 8

Inferring Value From Transactions in a Private Company's Securities

8.01 Private companies frequently complete transactions that involve issuing equity securities, either to raise funds or in connection with other negotiations. In addition, investors or employees who hold equity securities may sell their holdings to other investors or unrelated third parties in a private transaction or *secondary market transaction*. The primary purpose of this chapter is to provide a framework for evaluating private transactions and secondary market transactions and their relevance for estimating fair value of the equity securities issued as compensation.

8.02 The relevance of private or secondary market transactions to estimating the fair value of the various equity securities within an enterprise will depend on the facts and circumstances, and making this assessment may require the use of significant judgment. The Equity Securities Task Force (task force) believes these transactions should generally be considered when estimating the fair value of the various equity securities within the enterprise. However, because in some cases, these transactions may include multiple value drivers or strategic components, it is necessary to consider the specific transaction dynamics in understanding their relevance for estimating fair value.

8.03 There are many types of private transactions that may be completed, with differing degrees of relevance as an indication of the fair value of the securities within the enterprise. In most private transactions, the company is either a party to the transaction or fully informed about the facts and circumstances surrounding the transaction; therefore, the company is in a position to make a determination about the implications of the transaction to the fair value of the equity securities within the enterprise. In many cases, it may be possible to use the price from a transaction to solve for the total equity value of the enterprise and the value of the other securities within the enterprise (the backsolve method), as discussed in paragraphs 4.16–18. In other cases, adjustments to the prices observed in a transaction may be needed. Some of the more frequent types of private transactions and their relevance to the fair value of the securities within the enterprise are as follows:

- a. Simple preferred stock financing transactions
 - i. When the transaction involves new investors, and the company is not in distress, the company and existing investors, if any, have an incentive to negotiate the best possible price for the shares; however, the new investors have an incentive not to overpay. These transactions generally are relevant in estimating the fair value of the securities within the enterprise.
 - ii. When the transaction does not involve new investors, the investors are effectively not at arm's length. The task force believes more weight should generally be given to transactions that involved robust negotiations (for example, if certain investors were increasing or decreasing their percentage ownership or if the round is at a different price than the previous round).

- iii. When the company is in distress, the price for a new round may incorporate a steep discount in situations in which the investor was able to capitalize on the company's need for capital. Raising this capital may improve the equity value for the company. In these situations, it may be appropriate to estimate the value of the equity securities within the company, considering the company as a going-concern post-transaction rather than basing the valuation on the situation for the company immediately prior to the transaction.
- b. Strategic preferred stock financing transactions
- i. When the transaction involves a strategic relationship in which the investor receives certain benefits over and above the value that is expected to be realized from the stock itself, the transaction may reflect a higher price for the stock than a market participant who did not receive these benefits would be willing to pay. For example, pharmaceutical companies may invest in biotech companies at relatively early stages of development because there is value in being the first to know about the companies' progress on various drug candidates. Thus, the price the pharmaceutical company pays may reflect these additional benefits. In these cases, one approach would be to perform a valuation of the equity using other methods but then also compare the model values to the transaction price to assess whether the implied value is reasonable in light of the strategic benefits the investor may realize.
 - ii. When an investor invests in the company and also negotiates a formal license to use the company's products in the investor's business, it may be necessary to allocate value between the equity investment and license.¹ In these cases, one approach would be to perform a valuation for both the equity and license agreement using other methods and then compare the combined values to the total investment.
 - iii. When a strategic relationship is formed in which any additional elements of the transaction equally benefit the company and investors, it may be an indication that the transaction price is at or near fair value. In these cases, the backsolve method may be appropriate without additional adjustments.
- c. Tranched preferred financing transactions
- i. A *tranched preferred investment* is a transaction in which the investors agree to buy a certain number of shares at the initial closing date, as well as additional shares at one or more future dates, at a prenegotiated price. Typically,

¹ Note that the focus in this discussion is to understand the implications of multielement transactions on the value of the securities sold in the observed transaction and the corresponding value of the other securities in the enterprise. In some cases, it is also necessary to recognize the elements of multielement transactions separately in the entity's financial statements. The guidance regarding the accounting and valuation treatment for such transactions is beyond the scope of this guide.

both tranches are for the same class of preferred stock and have the same price per share, but the investment in the subsequent tranches is contingent on the company meeting certain milestones. In most cases, both the company and investors have committed to complete the subsequent tranches whenever the milestones are met, regardless of whether the value of the company has changed for other reasons (that is, the tranching structure creates a contingent forward contract rather than an option under the control of one of the parties). Because in most cases, the preferred stock would be expected to increase in value if the milestones are met, the initial investment price typically reflects a premium to the value on the initial investment date (including both the preferred stock itself and the contingent forward), and the later investment is at a discount to the value. In other cases, the criteria for receiving the next tranche may be unrelated to the company's progress, but the preferred stock value may still increase due to the overall progress of the company over the time frame. Therefore, before relying on a tranching preferred transaction to imply the value of the various equity securities within the enterprise, the task force believes the transaction price would need to be allocated among the initial investment and forward contract. In these cases, to estimate the value of the common stock as of the initial transaction date, one approach would be to allocate the transaction price between the stock and forward contract to estimate the value of the tranching preferred stock and then solve for the equity value that is consistent with that preferred stock value. For subsequent investment dates, the valuation would then consider the future value of the preferred stock implied by the model used to value the forward contract, making adjustments for any unexpected changes in the company's performance or the market over the intervening period.

- d. Use of shares in an acquisition or a joint venture
 - i. When private companies use shares in the acquisition of other companies, the transaction documents may specify a value for these shares. In many cases, however, the value specified in the documents is the price paid in the latest preferred financing round, but the shares issued are common stock. This same situation occurs in joint ventures in which one party may contribute cash, and the other may contribute intellectual property, and the securities issued in exchange for cash are senior to the other securities. It is important to carefully consider the rights and preferences of each class of equity when estimating the aggregate fair value implied by the transaction. In these cases, one approach would be to perform a specific valuation of the securities issued or the noncash consideration received. It would not be reasonable to rely solely on the nominal price specified in the documents.

e. Direct common stock transactions

- i. In some cases, an investor may purchase common stock directly from common stockholders in the company, either as a stand-alone transaction or in connection with a preferred stock transaction. For example, in some transactions of this type, the company or its current investors may be unwilling to issue as much stock as a new investor would like. Thus, the new investor may approach the holders of the common stock to see if they would be willing to sell. Frequently, these transactions involve the purchase of the common stock at the same price as the preferred stock. These situations require careful analysis of the negotiation dynamics to understand the investor motivations and the implications for the fair value of the common stock.
 - (1) If the common stock is only a portion of the investment, the transaction may be considered in aggregate to imply a value for the preferred stock and a value for the common stock consistent with the overall transaction. In this situation, it is important to carefully consider the rights and preferences of each class of equity when estimating fair value of each class of securities consistent with the aggregate fair value implied by the transaction.
 - (2) If the investor has strategic reasons for the investment, the investor may be willing to pay more than fair value for the common stock in order to meet some other goal, even if the specific investment is not expected to provide the investor's target return. In this situation, the investor acquires not only the common stock but an additional economic benefit that would need to be considered in assessing the implications of the transaction to the value of the securities.
 - (3) If the company has strategic reasons for accepting the investment, the transaction may imply that the preferred stock is worth more than what was paid for it. For example, if the common shareholders who benefit from the transaction still exert influence over the company, they may accept a deal that provides them with liquidity, even if it is dilutive to the remaining shareholders. In this situation, the task force believes other indications of value would generally need to be considered when assessing the value of the common stock.
 - (4) Other factors to consider when evaluating these transactions are whether the transaction is a one-time event or repeated and whether it is open to only a few common stockholders (for example, the founders or senior executives only) or is a broader

tender offer. If the transaction is part of a repeatable exit market for the employees, it generally provides a strong indication of fair value.

Transactions in which an investor purchases common stock at a price that is near or equal to the preferred stock price may indicate that market participants think an initial public offering (IPO) is likely. Therefore, in valuing the equity securities in these types of situations, it may be appropriate to consider a hybrid method with some significant probability assigned to an IPO scenario in which the preferred stock converts and the preferred and common stock have the same value.

It should be noted that there may be tax implications if the company or its existing investors purchase stock from employees at a price higher than the assessed fair market value for tax purposes. (For example, if the company or its investors purchase shares at a price above the fair market value from an employee, the difference between fair market value and the transaction price may be considered income to the employee.) The company should consult its tax advisers in this situation.

- ii. Other common stock transactions may be facilitated by secondary exchanges. Secondary exchanges provide a venue where nonpublic debt and equity securities may be traded, either directly on the exchange or by use of the exchange as an intermediary.² Since 2003, the number of exchanges, number of funds that participate in these exchanges, and volume of shares transacting in these exchanges has grown significantly. The remainder of this chapter discusses secondary market transactions in more detail.

8.04 When estimating the fair value of the securities within an enterprise, it is important to consider private transactions and secondary market transactions and to assess the degree to which these transactions reflect the fair value of the securities within the enterprise. The definition of *fair value* in Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 718, *Compensation—Stock Compensation*, and 505-50 refers to "a current transaction between willing parties, that is, other than in a forced or liquidation sale." The definition of *fair value* in FASB ASC 820, *Fair Value Measurement*, refers to "an orderly transaction between market participants at the measurement date." Finally, the definition of *fair market value* in IRS Revenue Ruling 59-60 refers to a transaction "between a willing buyer and a

² Such traded securities include private company stock; restricted securities; auction-rate securities; structured products, such as residential mortgage-backed securities, collateralized mortgage bonds, and collateralized debt obligations; limited partnership interests; and bankruptcy claims. Secondary exchanges of this type manage trillions of dollars of alternative investments, including private company stock. Many of these exchanges are registered broker-dealers and, as of the date of publication of this guide, included, but were not limited to, such names as SecondMarket, SharesPost, GSTrUE, OPUS-5, and 144a-Plus. They have an international reach, but most transactions are focused in the United States. Although a number of different securities are traded on secondary exchanges, this chapter is focused on transactions in the securities of privately held companies on such exchanges.

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willing seller when the former is not under any compulsion to buy and the latter is not under any compulsion to sell, both parties having reasonable knowledge of relevant facts." All these definitions include the concept of a transaction between informed, willing parties.

8.05 Although this guide is primarily focused on fair value measurements under FASB ASC 718 and 505-50, FASB ASC 820 establishes a framework for measuring fair value and provides detailed guidance on orderly transactions between market participants. Furthermore, as discussed in paragraph 1.06, the task force recommends following the measurement guidance in FASB ASC 820 when accounting for share-based payment transactions, unless it is inconsistent with the guidance in FASB ASC 718 or 505-50. Therefore, the task force recommends considering the guidance in FASB ASC 820 in assessing the relevance of secondary market transactions to the fair value of the securities within the enterprise.

8.06 FASB ASC 820-10-35-36 states that "[v]aluation techniques used to measure fair value shall maximize the use of relevant observable inputs . . . and minimize the use of unobservable inputs." Therefore, to the extent that secondary market transactions meet the other characteristics required to be relevant indications of fair value, the task force believes it may be appropriate to prioritize these transactions over model-based estimates of fair value.

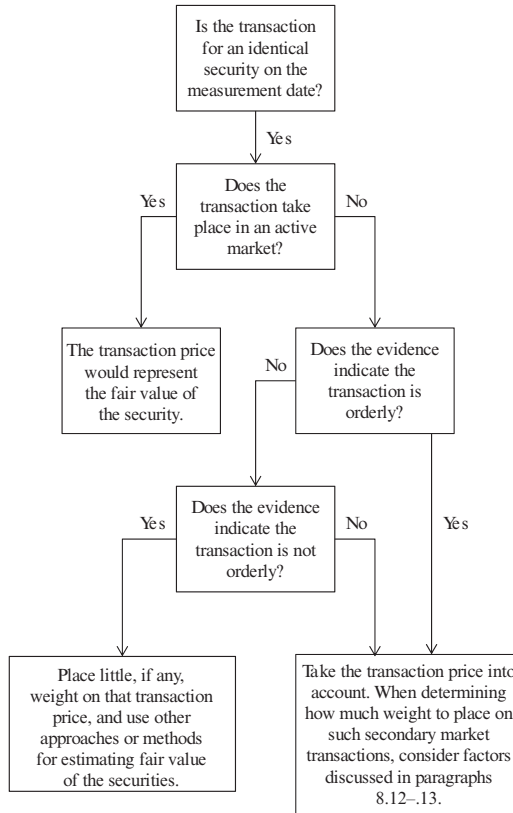
8.07 When evaluating secondary market transactions and their relevance for estimating fair value of the equity securities within an enterprise, the task force recommends considering the following framework, which is consistent with guidance in FASB ASC 820:

If there is a transaction for an identical security on the measurement date and

- if the transaction takes place in an active market, then the task force believes the transaction price would represent the fair value of the security.³
- if the evidence indicates that the transaction is orderly, then the task force believes that transaction price should be taken into account. The amount of weight placed on that transaction price when compared with other indications of fair value will depend on the facts and circumstances, including the volume of the transaction.
- if the evidence indicates that the transaction is not orderly, then the task force believes little, if any, weight should be placed on that transaction price.
- if the company does not have sufficient information to conclude whether a transaction is orderly, then the task force believes it should take into account the transaction price (that is, give it some weight in the analysis.)

³ Note that in Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 718, *Compensation—Stock Compensation*, and 505-50, restrictions that apply only during the vesting period are not considered in assessing the fair value of the security; however, post-vesting restrictions may be considered.

The following flowchart shows these steps.



8.08 FASB ASC 820 defines an *orderly transaction* as "a transaction that assumes exposure to the market for a period before the measurement date to allow for marketing activities that are usual and customary for transactions involving such assets or liabilities; it is not a forced transaction (for example, a forced liquidation or distress sale)." In private company financing transactions, the usual and customary marketing activities generally include time for the investors to perform due diligence and to discuss the company's plans with management or the board of directors, or both.

8.09 FASB ASC 820-10-35-54J states

[a] reporting entity shall consider all of the following when measuring fair value or estimating market risk premiums:

- a. If the evidence indicates the transaction is not orderly, a reporting entity shall place little, if any, weight (compared with other indications of fair value) on that transaction price.
- b. If the evidence indicates that a transaction is orderly, a reporting entity shall take into account that transaction

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price. The amount of weight placed on that transaction price when compared with other indications of fair value will depend on the facts and circumstances, such as the following:

1. The volume of the transaction
 2. The comparability of the transaction to the asset or liability being measured
 3. The proximity of the transaction to the measurement date.
- c. If a reporting entity does not have sufficient information to conclude whether a transaction is orderly, it shall take into account the transaction price. However, that transaction price may not represent fair value (that is, the transaction price is not necessarily the sole or primary basis for measuring fair value or estimating market risk premiums). When a reporting entity does not have sufficient information to conclude whether particular transactions are orderly, the reporting entity shall place less weight on those transactions when compared with other transactions that are known to be orderly.

A reporting entity need not undertake exhaustive efforts to determine whether a transaction is orderly, but it shall not ignore information that is reasonably available. When a reporting entity is a party to a transaction, it is presumed to have sufficient information to conclude whether the transaction is orderly.

8.10 When assessing the relevance of secondary market transactions to the fair value of the securities within the enterprise based on the guidance in FASB ASC 820, an important consideration is whether the secondary market transaction is orderly or not orderly. FASB ASC 820-10-35-54I states:

Circumstances that may indicate that a transaction is not orderly include the following:

- a. There was not adequate exposure to the market for a period before the measurement date to allow for marketing activities that are usual and customary for transactions involving such assets or liabilities under current market conditions.
- b. There was a usual and customary marketing period, but the seller marketed the asset or liability to a single market participant.
- c. The seller is in or near bankruptcy or receivership (that is, the seller is distressed).
- d. The seller was required to sell to meet regulatory or legal requirements (that is, the seller was forced).
- e. The transaction price is an outlier when compared with other recent transactions for the same or a similar asset or liability.

A reporting entity shall evaluate the circumstances to determine whether, on the weight of the evidence available, the transaction is orderly.

Although the preceding guidance is focused on the seller's perspective, in which the transaction price may be below fair value, the task force believes that the assessment of whether a transaction is orderly or not orderly may also consider the perspective of the buyer, in which the transaction price may be above fair value. That is, in some situations, buyers in secondary market transactions may have a perception of the value of the company that is not informed or otherwise not supported by the fundamentals, and those transactions would not necessarily be considered to be orderly.

8.11 Because the company may have little information about the nature of the secondary market transactions, it may be difficult to conclude whether these transactions are orderly. Therefore, as noted in FASB ASC 820-10-35-54J(c), these transactions may not necessarily be the sole or primary basis for measuring fair value. However, if the company is unable to conclude that the transaction is not orderly, the task force believes the transaction price would need to be given some weight in measuring fair value.

8.12 *Weighting.* Determining how much weight to place on secondary market transactions in situations in which the company does not have sufficient information to conclude whether the transaction is orderly or not orderly requires significant judgment and is dependent on specific facts and circumstances. When making that evaluation, the task force believes it may be helpful to consider the factors listed in this paragraph. The following list is not meant to be all-inclusive; there may be other factors to consider, and no one factor is individually determinative:

- a. Timing of transaction data.* In evaluating the relevance of secondary market transactions, the task force believes one would need to consider the time that has elapsed between the transaction date and valuation date. The point at which a transaction becomes "stale" will vary depending on specific facts and circumstances. According to FASB ASC 820-10-35-54D, an adjustment to the transaction prices may be necessary when the price is "stale." In particular, in many secondary market transactions, there is a delay of 30–60 days between the date at which the price is agreed between the parties and the date at which the transaction closes, during which the company or existing investors have the right to exercise their right of first refusal. Thus, it may be important to consider whether the transaction is binding as of the agreement date and whether prices have changed over the period between the agreement date and transaction close.
- b. Sufficient sophisticated bidders.* In most secondary exchanges, the investors must typically be accredited, which requires a certain minimum income or level of assets and a statement that the investor is willing to accept the risks of buying securities through these exchanges. Thus, the pool of buyers may be limited. The level of investor interest and activity will vary depending on the company and would need to be assessed for each situation.

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- c. *Sufficient information to value the investment and make an investment decision.* Companies traded on secondary exchanges are not subject to the financial reporting requirements faced by public companies, although certain secondary exchanges require that companies provide certain financial information (for example, audited financial statements). Due to the generally limited information available, investors may not be sufficiently informed to reasonably predict a company's potential. To the extent that the investors do not have the financial information about the company, these transactions may be less relevant indicators of fair value of the securities within the enterprise.
- d. *Pattern of trades.* In many cases, companies will establish a formal relationship with a secondary exchange. The first step in the process is a company partnering with a secondary intermediary. Next, the company decides which information is to be released, if any, and may provide an approved list of buyers. The share offering is then marketed to specified buyers, with approved information provided to these company-approved buyers. Once the information has been reviewed by the buyer(s), an offer, or offers, are made, and the trades are settled. In other cases, the company itself may provide no information and even take steps to block sales in the secondary exchange. If the transactions involve only one or two investors who want to acquire a certain percentage ownership, then the transactions may not reflect a repeatable price. If the transactions involve many investors and many sellers, and the pattern of bidding reflects a reasonably low disparity between the lowest and highest bids among the winning bidders, then the transactions may provide a better indication of fair value. It should be noted that even for public companies, the number of shares traded in any given month will typically represent only an insignificant percentage of the total outstanding number of shares. Therefore, it is important to consider whether there is a sufficient number of buyers and sellers and the repeatability of the transactions.
- e. *Other biases or costs of holding, hedging, or trading the securities.* In addition to the preceding factors, it is important to consider whether any other biases or perceptions of additional costs would apply in the secondary market transactions.

8.13 As indicated in paragraph .31 of Statement on Standards for Valuation Services No. 1, *Valuation of a Business, Business Ownership Interest, Security or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100), in developing the valuation, the valuation specialist should consider all three valuation approaches (market, income, and asset). If more than one valuation approach or method is used, as is often the case, the valuation specialist would need to assess the relevance and quality of the data used in each, as well as the various value indications. Because weighting will depend upon the relevant strengths and confidence in one approach versus another, the valuation specialist would need to consider the merits and weaknesses of the other valuation approaches or methods used when determining how much weight to place on secondary market transactions.

8.14 If the transactions are not considered to represent fair value or are given only limited weight in estimating fair value, it is a best practice for the

company and valuation specialist to compare the estimated fair value of the securities to the transaction prices, explaining the differences to the extent the available information allows.⁴

8.15 Given the factors discussed in the preceding paragraphs, the task force believes that although private transactions and secondary market transactions are observable, they would need to be assessed for relevance to determine how to weight them in estimating the fair value of the securities within the enterprise. In certain situations, it may be appropriate to give these transactions substantial weight, but in others, they may be given limited weight. In particular, even if the company concludes that these transactions do not provide the sole measure of the fair value of the securities within the enterprise, the task force believes such transactions would need to be carefully considered in estimating the fair value of these securities.

⁴ It should be noted that paragraphs 2–4 of FASB ASC 505-30-30 discuss accounting for a company's purchases of its own shares from shareholders to be held in treasury in situations when the purchase price may include other transaction elements. This guidance presents a requirement in accounting principles generally accepted in the United States of America that other elements in the exchange be identified to the extent possible. It is possible that such a transaction may also involve the receipt or payment of consideration in exchange for stated or unstated rights or privileges. The price paid in excess of the amount accounted for as the cost of treasury shares shall be attributed to the other elements of the transaction and accounted for according to their substance. If no stated or unstated consideration in addition to the capital stock can be identified, the entire purchase price shall be accounted for as the cost of the treasury shares.

Chapter 9

Relationship Between Fair Value and Stages of Enterprise Development

9.01 Fair value is estimated as of a specific date. The fair value of the securities within an enterprise is not static; rather, fair value changes over time as all of the elements that enter into estimating fair value change over time. As discussed in chapter 2, "Stages of Enterprise Development," one of the principal elements contributing to a change in fair value over time is the stage of development of the enterprise. Typically, value is created as an enterprise advances through the various stages of its development. As discussed in paragraph 2.02, as an enterprise progresses through the stages, it may achieve certain milestones, resulting in correspondingly diminished uncertainty and perceived risk and thereby enhancing the value of the enterprise. If, however, progress slows, ceases, or reverses, and the enterprise fails to progress through the "normal" stages of development, value would likely be diminished.

9.02 The achievement of a milestone does not necessarily in and of itself enhance value. As with any other determinant of value, the valuation specialist should consider the milestone in conjunction with other relevant factors when estimating an overall value at a point in time. However, all else being equal, the progressive achievement of milestones, such as those listed in paragraph 3.03, tends to enhance the value of the enterprise.

9.03 Different valuation approaches may be more appropriate for some stages of enterprise development than for other stages.¹ Paragraphs 9.04–.09 discuss which approaches are typically considered more or less appropriate in each stage. As discussed in paragraphs 1.15 and 4.03, a valuation specialist should, whenever possible, apply more than one approach that would compare and assess the results. Under Statement on Standards for Valuation Services (SSVS) No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100), and the Appraisal Foundation's *Uniform Standards of Professional Appraisal Practice* (as noted in footnote 3 in paragraph 4.03), a valuation specialist should consider all three approaches (market, income, and asset) for valuing an enterprise, and if one or more is not used, the valuation specialist should explain such nonuse. As discussed in paragraph .42 of SSVS No. 1, the valuation specialist should correlate and reconcile the results obtained under different approaches and methods and assess the reliability of the results under different approaches and methods. Based on this analysis, the valuation specialist should then determine whether the fair value estimate should reflect the results of one method or a combination of the results of more than one method.

9.04 *Stage 1.* Because the enterprise has no product revenue and little or no expense history, it is typically unable to make reliable cash flow forecasts; therefore, the income approach would generally not provide a reliable estimate

¹ Please note that the use of different valuation techniques at different stages of development is not inconsistent with the guidance in Financial Accounting Standards Board *Accounting Standards Codification* 820-10-35-25 because changing facts and circumstances may require the use of different valuation techniques.

of value. Because of the lack of comparative information available for publicly traded or privately held start-up enterprises, the market approach using the guideline public company or guideline company transactions methods would also generally not provide a reliable estimate of value. Valuation techniques that may be appropriate include the following:

- a. Backsolve method.* The backsolve method is the most reliable indicator of the value of the enterprise at stage 1 if relevant and reliable transactions have occurred in the enterprise's equity securities. If transactions have occurred but are not arm's length or not concurrent with the valuation date, these transactions should still be considered, making adjustments as needed, considering the nature of the transaction and any changes in value that have occurred since the transaction (or that are expected to occur prior to the transaction). See paragraphs 4.16–18 and 8.03 for more details.
- b. Asset accumulation method.* The asset accumulation method may be an appropriate indicator of the value of the enterprise at stage 1, but it is complicated by the possible existence of internally developed intangible assets and goodwill not captured on the balance sheet of the enterprise. As discussed in chapter 3, "Factors to Be Considered in Performing a Valuation," the asset approach is based on the principle that the fair value of an enterprise is equal to the fair value of its assets less the fair value of its liabilities. For early-stage enterprises, a significant amount of value may lie in intangible assets (for example, patented and unpatented technology assets, copyrights, domain names, and so on). Thus, the application of the asset approach to an early-stage enterprise necessitates a consideration of the value of intangible assets. Unless the enterprise has recently undergone a business combination or change of control, intangible assets will likely not be recognized in the enterprise's balance sheet. The identification and valuation of intangible assets can add significant complexity to the asset approach. The likelihood that intangible assets are significant to the fair value of an enterprise's assets increases as the enterprise moves through the stages of development. Without a consideration of intangible assets, the asset approach may be unreliable.

9.05 Stage 2. The income approach (discounted cash flow [DCF] method) will likely be more relevant than in stage 1; however, the enterprise may still have significant difficulty in forecasting cash flows. As such, valuation specialists may choose to use the income approach during stage 2 as a secondary approach (that is, for purposes of comparison with the results obtained from another approach) and will typically use a DCF method and relatively high discount rate. Similar to stage 1, the guideline public company and guideline company transactions methods generally would not provide a reliable estimate of value because of (a) the lack of publicly traded start-up enterprises and transactions from which to obtain comparative information and (b) the fact that market multiples could exhibit substantial dispersion from one enterprise to the next, making it difficult to determine any kind of reliable "average" multiple. Additionally, because stages 1 and 2 enterprises have yet to generate revenue or profits, there is generally no financial metric to which the valuation

specialist can apply a multiple. As with stage 1, the asset approach (asset accumulation method) also may be appropriate during stage 2; however, it is more likely that intangible assets will be a material part of the enterprise's value, thus adding complexity to this approach. After stage 2, the relevance of the asset approach tends to diminish significantly because it will likely be more reliable to measure the value of intangible assets and goodwill in aggregate through the use of a method under the income or market approaches that incorporates enterprise-level cash flows. Similar to stage 1, the backsolve method will often be the preferable method in stage 2. The reliability of the backsolve method will likely increase because investments made by venture capital firms during stage 2 may provide a more reliable indicator of fair value than the investments made by angel investors in stage 1.

9.06 Stage 3. Although, generally, there is no product revenue during this stage, a valuation specialist may be able to obtain financial forecast information that is more reliable than comparable information obtained in earlier stages and, therefore, may have a reasonable basis for application of the income approach. However, similar to stage 2, both the income approach and market approach present challenges. Valuation specialists who use the income approach during stage 3 typically use a DCF method and relatively high discount rate. However, because profits for the enterprise may still be years in the future, and the venture capital rates of return cited for investments in this stage span a wide range (30 percent to 50 percent), the income approach value may be hard to estimate with any degree of certainty. A market approach using the guideline public company and guideline company transactions methods also may be difficult to apply, given the lack of publicly traded start-up enterprises from which to obtain comparable information. Therefore, rather than relying exclusively on these methods, because it is typical for multiple rounds of institutional financing to have occurred by this stage, the backsolve method may provide a reliable indication of value that should be used as a basis for comparison to any other indication.

9.07 Stage 4. Both the income and market approaches are typically appropriate for stage 4. The reliability of a financial forecast would tend to be higher in stage 4 than in stage 3 because more information is available on which to base the forecast; therefore, the discount rate for a DCF method under the income approach would tend to be lower in stage 4 than in stage 3, reflecting the lower degree of risk. If there are comparable publicly traded enterprises from which to obtain information, a valuation specialist may consider such enterprises under a market approach and adjust the valuation, considering the enterprise's relative size, expected growth, and profitability. Moreover, because for a particular enterprise there will have been at least as many rounds of financing by stage 4 as there were by stage 3, the valuation specialist will likely have a reasonable basis for application of the market approach using the backsolve method.

9.08 Stage 5. Income and market approaches would generally be appropriate, as in stage 4, and the discount rate for a DCF method under the income approach would tend to be lower in stage 5 than in stage 4. Under a market approach, because the enterprise may be closer to a liquidity event in stage 5 than in stage 4, adjustments to the valuation based on comparisons with publicly traded start-up enterprises would tend to be lower in stage 5. The backsolve method should still be considered, especially for arm's-length

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transactions with new investors. However, if there are no new investors or if the round is led by a strategic investor with existing investors tagging along at low levels, the backsolve method may not provide a reliable indication of value. For example, small investments made by existing investors in the period leading up to an initial public offering most often do not reflect a negotiated price.

9.09 *Stage 6.* Both the income and market approaches would be appropriate for an enterprise in this stage. Because the enterprise has an established financial history, the reliability of forecasted results would tend to be higher than in an earlier stage; therefore, the discount rate for a DCF method under the income approach would tend to be lower than in an earlier stage. For an income approach that uses the expected present value technique, the existence of an established financial history would enable the development of a more reliable set of probabilities than would be the case if that valuation technique were applied in an earlier stage. As in stage 5, the backsolve method should be considered for arm's-length transactions.

9.10 Paragraphs 9.04–.09 summarize, stage by stage, which valuation approach(es) would typically be appropriate or inappropriate for each stage. That information also may be looked at in a different way. The following table summarizes, approach by approach, in which stages or circumstances that approach would typically be used:

<i>Valuation Approach</i>	<i>Stages or Circumstances for Which Approach Is Typically Appropriate or Not Appropriate</i>
<i>Market</i>	The guideline public company and guideline company transactions methods typically increase in applicability and feasibility as an enterprise progresses through the middle stages and enters later stages of its development (for example, as an enterprise passes through stages 3–6). It is unlikely that comparable enterprises with readily determinable fair values will be identified during earlier stages. Investments by friends, family, or angels in shares of the enterprise's stock, which typically occur during earlier stages, may provide reliable indicators of fair value and might be used in the backsolve method. As institutional rounds of financing occur, the backsolve method may be used to provide an indication of value and corroborate the indications of value under other valuation techniques. All investments in the enterprise's equity should be examined to determine if they are reflective of market participant assumptions regarding the firm's value. (Synergies specific to a particular buyer would ordinarily be factored out of a fair value estimate; see paragraph 4.19.)
<i>Income</i>	The income approach typically is applied to later-stage enterprises (for example, stages 4–6) as opposed to early-stage enterprises because there is a greater likelihood at later stages of there being a financial history on which to base a forecast of future results. The income approach may be appropriate in stage 2 and stage 3 with a relatively high discount rate; however, consideration should be given to the reliability of the forecast and the selection of an appropriate discount rate, given the usually speculative nature of the forecast at this early stage.

<i>Valuation Approach</i>	<i>Stages or Circumstances for Which Approach Is Typically Appropriate or Not Appropriate</i>
<i>Asset</i>	<p>Historically, the asset approach (using the asset accumulation method) has been applied primarily to enterprises in stage 1 and some enterprises in stage 2. The asset approach would typically be applied under any of the following circumstances:</p> <ul style="list-style-type: none"> • There is a limited (or no) basis for using the income or market approaches. That is, there are no comparable market transactions, and the enterprise has virtually no financial history and, consequently, is unable to use past results to reasonably support a forecast of future results. • The enterprise has not yet made significant progress at research and development and has not yet developed a product. • A relatively small amount of cash has been invested. <p>The use of the asset approach is generally less appropriate once an enterprise has generated significant intangibles and internal goodwill. The generation of these intangibles often starts to gain momentum in the middle stages of the enterprise's development and continues to build through the later stages.</p>

Chapter 10

Valuation Implications of a Planned Initial Public Offering

10.01 The preceding chapters of this guide discuss the stages of development of a privately held enterprise and the associated considerations for estimating the fair value of its equity securities. As an enterprise prepares for an initial public offering (IPO), it typically would need to demonstrate continued success in the execution of its business plan and strategy by meeting important milestones. In addition, as discussed more fully in appendix A, "The Initial Public Offering Process," an enterprise would need to prepare for the rigors of the public marketplace and compliance with the legal and regulatory requirements of being a public company. This chapter, as supplemented by appendix A, discusses aspects of the IPO process and the IPO itself that affect enterprise value and, consequently, the fair value of the enterprise's equity securities. In addition, the discussion of the IPO process in appendix A highlights the associated risks and uncertainties that an enterprise faces during this lengthy, complex, and costly undertaking.

10.02 This chapter cites the most recent data available to the Equity Securities Task Force (task force) from various research studies and other sources. Readers are cautioned that such data may not reflect the business environment as of their reading and are presented only for the purpose of explaining the concepts in this chapter; more recent data may be available elsewhere. When performing a valuation, readers are also cautioned not to use the data in this chapter as the sole basis for estimating discounts or discount factors. Rather, the facts and circumstances of the enterprise and its equity securities should be considered in determining the appropriate data to use in the valuation.

10.03 In preparing for an IPO, an enterprise may attempt to project its ultimate IPO price. As discussed further in appendix A, an enterprise also may obtain an estimate of the IPO price when it selects an investment banker to perform underwriting services. Ultimately, the managing underwriter and the company's board or management, or both, have primary responsibility for finalizing the IPO price. That price is not finalized until the date the registration statement becomes effective. Estimates of the IPO price at earlier stages of the process, including the estimated price range in a preliminary prospectus, are not binding and presume the successful completion of the offering under market conditions that are conducive to the offering. Early estimates of IPO prices by investment bankers, particularly those made as part of the selection process, often differ from the final IPO price because, among other things, the estimates are made at relatively early stages, and the bankers may not yet have performed all their due diligence on the enterprise's financial projections. Even after the company files its preliminary prospectus with an estimated IPO price range and commences the offering, the company and managing underwriter may reassess the demand for the IPO and change the estimated price range, either upward or downward. In addition, the actual IPO price may be materially influenced by the specific supply and demand characteristics of the market at or near the date of the actual pricing. These factors can include other offerings coming to market, announcements by comparable companies or

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competitors and the market performance of their shares, or other developments in the company's industry or region. Therefore, management or an underwriter's estimate of the ultimate IPO price is generally not likely to be a reasonable estimate of the fair value for pre-IPO equity transactions of the enterprise.

10.04 Also, the ultimate IPO price is generally not likely to be a reasonable estimate of the fair value for pre-IPO equity transactions of the enterprise. The value of a private enterprise before and after a successful IPO may be significantly different.¹ In addition, the IPO event itself increases enterprise value because, among other things, it allows the enterprise access to the public capital markets.²

10.05 The IPO price also reflects an estimate of the expected valuation of the company's shares based upon its position following a successful IPO. As a result, it normally incorporates the effect of the issuance of primary shares by the company, the proceeds from which can be used to either reduce the company's debt level or provide capital to fully finance the company's expansion or development of its business plan. In contrast, most financings for earlier-stage companies do not allow the company to reach break-even cash flows and become self-sustaining. Therefore, the IPO price recommendation may be free from the risk premium associated with the need to raise additional capital associated with earlier-stage companies.³

10.06 As discussed in chapter 2, "Stages of Enterprise Development," the stage of operational development of an enterprise affects its value, which typically builds throughout the various stages of development, although generally not in a linear fashion. The stage of development will influence the perceived risk of investing in the enterprise, which, in turn, will influence the valuation. The reduction in the amount of perceived risk can be observed in a declining cost of capital as the enterprise progresses through the stages of development. A reduction in the cost of capital increases enterprise value, just as a decline

¹ Alternatively stated, in determining the value of privately issued securities relative to the ultimate initial public offering (IPO) price, some discount generally is expected. This discount reflects both the uncertainty regarding the success of the IPO and its price and the increase in marketability of the shares and correspondingly lower cost of capital following the IPO.

See, for example, John D. Emory, F.R. Dengel III, and John D. Emory Jr., "Expanded Study of the Value of Marketability as Illustrated in Initial Public Offerings of Common Stock May 1997 through December 2000," *Business Valuation Review* (December 2001): 4–20.

See also Shannon P. Pratt, *Business Valuation Discounts and Premiums* (Hoboken, NJ: John Wiley & Sons, Inc., 2009).

See also Shannon P. Pratt, *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, 5th ed. (New York: McGraw-Hill, 2007).

² A number of studies have attempted to isolate the portion of the discount described in the preceding footnote that is attributable solely to marketability.

See, for example

- Karen H. Wruck, "Equity Ownership Concentration and Firm Value: Evidence From Private Equity Financings," *Journal of Financial Economics* 23, no. 1 (June 1989): 3–28.
- Michael Hertz and Richard L. Smith, "Market Discounts and Shareholder Gains for Placing Equity Privately," *Journal of Finance* 48, no. 2 (June 1993): 459–85.
- Mukesh Bajaj and others, "Firm Value and Marketability Discounts," *Journal of Corporation Law* 27 (Fall 2001): 89–115.
- Frances A. Longstaff, "How Much Can Marketability Affect Security Values?" *The Journal of Finance* 50 (December 1995): 1767–74.

³ The degree to which the IPO provides the majority of the capital needed to retire debt or fund future operations depends on the market's current appetite for IPOs, the industry, and other factors. For example, in biotech, the IPO may be just one financing event in funding the long path to Food and Drug Administration approvals.

in interest rates increases the value of a bond with fixed interest and principal payments.

10.07 Upon a successful IPO, enterprises typically experience a further reduction in their cost of capital. That is, the IPO event eliminates or mitigates many of the factors that led to a *marketability discount* or discount for lack of marketability for the minority equity securities in the enterprise, as discussed in chapter 6, "Valuation of Equity Securities in Complex Capital Structures." For example, the IPO generally

- provides liquidity for the enterprise's equity securities by providing a public resale market. Increased liquidity (that is, a larger pool of potential investors) is provided for equity securities listed on a national exchange or association versus equity securities not so listed.
- reflects an expectation of reduced risk in the business, with more stable operations consistent with other public companies.
- reduces limitations on the ability of the holder to transfer the equity securities. Purchases of registered securities in the IPO or aftermarket are not subject to the resale restrictions imposed under the federal securities laws on purchases of unregistered securities. (See paragraph A.01a.)
- reduces valuation uncertainty. Securities traded in active markets have readily determinable values, and Securities and Exchange Commission regulations require that public enterprises provide investors with financial statements and other information on a regular basis.
- reduces concentration of ownership. The sale of additional equity securities to investors in the public domain reduces the concentration of ownership and increases the proportionate amount of ownership in the enterprise that is available for purchase.
- reduces or eliminates the priority, preferences, and special rights that may be associated with senior classes of equity or shareholder debt securities, together with many of the other rights or encumbrances that may be contained in a private company's shareholders' agreement.

10.08 The difference in the rates of return between privately held enterprises and publicly held enterprises can be observed historically on a portfolio basis. Paragraph B.01 tabulates portfolio returns of venture capital investors in privately held enterprises at various stages of development, as contrasted with returns on investments in publicly held companies over similar periods. The higher returns on venture capital investment portfolios are consistent with the expected higher cost of capital for privately held enterprises, particularly enterprises in the earlier stages of development. The reduction in the cost of capital upon an IPO can be observed historically on an enterprise basis. Paragraph B.02 tabulates the cost of capital for privately held enterprises at various stages of development. The cost of capital for public enterprises is typically lower. The typically lower cost of capital for newly public enterprises is associated with enhanced enterprise value.

10.09 A comparison of the cost of equity capital of enterprises before and after an IPO leads to the conclusion that an IPO typically reduces the enterprise's cost of capital and increases enterprise value. This general decline in the

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cost of equity capital, all else being equal, increases the value of the enterprise and is one factor in explaining why the IPO price for an enterprise often may be significantly higher than the fair value per share of a minority interest in the enterprise's equity securities in the period preceding the IPO. In simple terms, as illustrated in appendix E, "Table of Capitalization Multiples," a reduction in the discount rate (cost of capital) will increase the capitalization multiple (valuation) of an assumed perpetual annuity (enterprise), often significantly.

10.10 In summary, this chapter discusses and explains the factors that contribute to differences between the fair value of an enterprise's equity securities in periods preceding the IPO and the ultimate IPO price. Among those factors are the marketability provided by the IPO event and the reduction in the newly public enterprise's cost of capital resulting from its access to more liquid and efficient sources of capital. Moreover, as more fully described in appendix A, the IPO process is complex and lengthy, with an uncertain outcome. During this process, the enterprise's continued execution of its business plan will result in an increase in its enterprise value resulting from (a) changes in the amount and relative timing of its future net cash flows (estimated and actual) and (b) a reduction in the risk associated with achieving its projected results. In addition, changes in macroeconomic factors (for example, actual and projected rates of economic growth, current interest rates, and expectations about future interest rates) also may affect the extent to which an enterprise's value changes during the period culminating in its successful IPO. The task force believes that all such factors should be considered in the context of the facts and circumstances of the enterprise in valuing privately issued securities in the periods preceding an IPO.

Chapter 11

Reliability of the Valuation

11.01 The reliability of a fair value estimate will be affected by the timing of the valuation (contemporaneous versus retrospective) and objectivity of the specialist performing the valuation (unrelated versus related party).¹ For purposes of valuing privately issued securities for which observable market prices of identical or similar securities are not available, the most reliable fair value estimate is produced by a contemporaneous valuation performed by an unrelated valuation specialist. However, different alternatives are available, and the decision about the timing of the valuation and selection of the specialist is made by the enterprise for each individual issuance of equity securities.

11.02 The statement that the reliability of a valuation specialist's fair value estimate will be affected by the timing of the valuation reflects the potential for bias to exist in a *retrospective valuation*. A contemporaneous valuation considers conditions and expectations that exist at the valuation date and cannot be biased by hindsight. Therefore, a contemporaneous valuation results in the most reliable fair value estimate as of the grant date of equity securities. When a valuation is prepared after the fact (that is, a retrospective valuation), it is important to ensure that the assumptions and estimates underlying the valuation reflect only the business conditions, enterprise developments, and marketplace expectations that existed as of the valuation date. The greater the interval between the grant date of securities and their valuation, the higher the likelihood that the valuation may be biased by subsequent experience. Even if forecasts are available that were prepared contemporaneously with the as-of date of the valuation, other assumptions may be biased by subsequent experience. Because it is difficult to separate the benefit of hindsight when assessing conditions that existed at the valuation date, it is important that judgments about those conditions be made and documented with supporting evidence on a timely basis.

11.03 Although a contemporaneous valuation is, in theory, a valuation performed concurrent with and as of the grant date of securities, practical considerations may prevent a contemporaneous valuation from being contemporaneous in the literal sense. For example, a valuation specialist engaged on December 31, 2X10, to perform a valuation as of December 31, 2X10, may not, in view of the amount of work to be performed, be able to complete a final valuation report until February 28, 2X11. If significant milestone events occur between December 31, 2X10, and February 28, 2X11, the valuation specialist may be placed in the difficult position, akin to that of a valuation specialist performing a retrospective valuation, of having somehow to ignore those events and base the valuation only on expectations as of December 31, 2X10, of the likelihood and timing of future events versus having the knowledge of the subsequent achievement or nonachievement of those expectations.

¹ Typically, a related-party valuation specialist refers to an internal valuation specialist. See the Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) glossary for the definition of a *related party* under accounting principles generally accepted in the United States of America. An enterprise may determine that it possesses sufficient relevant expertise and experience in-house to value appropriately its business and associated equity securities. Often, however, such experience is not available in-house.

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11.04 In view of the practical considerations in the preceding paragraph, for purposes of this guide, contemporaneous is not limited to the grant date itself; rather, it signifies at or around the grant date, appropriately adjusted. Best practice for a valuation specialist would be to start and perform the majority of the valuation work in advance and anticipation of the grant date, with subsequent adjustments made at the grant date if significant events (for example, the achievement of milestones) occurred shortly before the grant date that were not taken into account in the earlier stages of the performance of the valuation work. (See also paragraphs 11.17–.19 and Q&A 12.16, which discuss that, in some circumstances, it may be appropriate to consider events past the grant date.)

11.05 As a practical matter, an enterprise may consider obtaining a series of contemporaneous valuations performed periodically, concurrently with stages of development or the achievement of significant milestones or concurrently with the dates of issuance of equity securities. Such a series of valuations may help demonstrate value creation over time. An important benefit of a series of contemporaneous valuations versus a similar series of retrospective valuations is that the contemporaneous series has greater reliability for users and often is more likely to meet and satisfy the requirements of third parties, such as financial market regulators and taxing authorities. Meeting those requirements is of particular significance for enterprises considering an initial public offering (IPO) in the future. The Equity Securities Task Force (task force) recommends that an enterprise weigh the costs of obtaining contemporaneous valuations against the risks inherent in retrospective valuations, as further discussed in paragraphs 11.08–.09.

11.06 The task force recommends that the frequency and timing of contemporaneous valuations be based on the following considerations:

- a. The imminence of a possible IPO. (A higher frequency would be expected the more imminent the IPO.) Enterprise value generally displays increased volatility in the period prior to an imminent IPO because the pace of operational or financial activities that may affect value typically increases during that period.
- b. The frequency and timing of equity issuances. (The task force recommends consideration of performing contemporaneous valuations in conjunction with issuances.)
- c. The occurrence of significant events, such as milestones. (A contemporaneous valuation would no longer provide a justifiable fair value for common stock or an option grant occurring at a date subsequent to that valuation if one or more significant events had occurred between the valuation date and grant date.)
- d. Cost-benefit considerations, as discussed in paragraphs 11.08–.09.

See also paragraph 13.11 for a related discussion of the frequency of issuances of valuation reports.

11.07 As noted previously, a retrospective valuation and contemporaneous valuation frequently result in different fair values because of the bias of hindsight. As a result of the difficulty in objectively identifying and eliminating the effect of events that occur subsequent to the valuation date, hindsight often fails to reflect accurately the growth in value over the elapsed time interval as an enterprise achieves significant milestones, and its probability for success increases. Hindsight also often fails to reflect the fact that the enterprise was

one of many enterprises at an earlier stage, many of which did not survive as they sought to achieve the various milestones necessary for success. The fact that only a relatively small number of enterprises survived reflects the greater risk and, therefore, the lower fair value that existed at earlier stages of development. Not only does hindsight likely influence the valuation specialist performing the valuation, it also affects the way third parties reading the valuation report view the valuation.

11.08 Many privately held enterprises forgo obtaining contemporaneous valuations during early stages of development. For example, early-stage, privately held enterprises often have little current market value beyond the cash available to them. With limited access to capital, these enterprises often choose to use their limited resources for creating value rather than measuring it. At other times, such an enterprise may not consider a contemporaneous valuation to be beneficial in relation to the cost because the enterprise does not consider material the effect on the financial statements of recording compensation expense related to issuances of equity securities. Moreover, because such an enterprise typically does not have debt and is not subject to public reporting requirements, a contemporaneous valuation typically is not required to comply with debt covenants or fulfill regulatory reporting requirements (although there may be income tax compliance issues).

11.09 Although the arguments raised in the previous paragraph represent legitimate issues faced during early stages of development, the task force recommends that an enterprise consider the following before concluding that a contemporaneous valuation is not warranted:

- Fair value-based measurements of stock, options, warrants, or other potentially dilutive securities issued to employees and others for goods or services are integral to the appropriate recording of the transaction under accounting principles generally accepted in the United States of America. Therefore, an objective measure of fair value, with sufficient credible evidential support, is required to properly record any such transaction.
- Generally, it is not appropriate to argue that early-stage enterprises commonly have little current market value and, therefore, the effect on the financial statements of not obtaining a contemporaneous valuation is not likely to be material because this argument requires making a judgment about the materiality of amounts (for example, fair value and compensation expense) that are unknown, absent the performance of a valuation.
- A contemporaneous valuation may have supplemental benefits in that the valuation report may provide management with insight into current business-related issues. A contemporaneous valuation may provide management with additional information related to the state of the industry and economy, the marketplace and major competitors, barriers to entry, and other significant risk factors. This information may be beneficial in managing operations and negotiating and evaluating current and future financing and capital alternatives.
- Because the future is uncertain, and the exact date for which an earlier valuation is most needed, such as the date of an IPO, typically cannot be determined with certainty, it may be helpful

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to have established a history of values by means of a series of contemporaneous valuations prior to any such IPO.

11.10 The discussion in the previous paragraph in favor of contemporaneous valuations over retrospective valuations may lead one to question whether retrospective valuations serve any purpose. Retrospective valuations, however, address the question of how an enterprise that, for whatever reason, did not obtain a contemporaneous valuation would estimate the fair value of common shares issued at an earlier date.

11.11 Procedures that a valuation specialist may wish to consider when performing a retrospective valuation in order to minimize the inherent bias of hindsight include the following:

- a.* Interview management of the enterprise to estimate the rationale underlying the assumptions at the grant date.
- b.* Examine cash or other transactions between the enterprise, its creditors, and its outside investors (such as venture capitalists) in relevant past periods.
- c.* Identify significant events, such as milestones, occurring between the grant date and IPO filing date that influenced subsequent changes in value. (Similarly, identify significant events, such as milestones, expected to occur between the grant date and IPO filing date that did not occur during that time and whose nonoccurrence influenced subsequent changes in value.)
- d.* Analyze the enterprise's monthly financial information, including cash flow information, to identify periods of improvement in financial condition. Discussions with the engineering, technical, or marketing staff may provide insight and corroborate findings from the financial analysis.
- e.* Consider events that have occurred within the enterprise and industry, consider stock market activity during the period, and review the price history of comparable publicly traded enterprises during relevant past periods.
- f.* Consider, once the events in item (*e*) have been identified, retaining a valuation specialist to perform separate valuations as of the dates of those events for purposes of benchmarking. (Refer to the previous paragraph.)
- g.* Review contemporaneously prepared budgets and forecasts as of the grant date.

11.12 The previous list is not all-inclusive, and an enterprise should consider chapter 3, "Factors to Be Considered in Performing a Valuation," and whether any such items have occurred subsequent to the valuation date, but prior to the finalization of the valuation, that would affect the valuation.

11.13 The statement that the reliability of a valuation specialist's fair value estimate will be affected by the objectivity of the specialist also reflects the perception by some that bias exists or has the potential to exist in a related-party valuation. Some perceive that this potential is present no matter how highly qualified the valuation specialist. If, for example, a valuation specialist is a member of management or the board of the enterprise being valued, he or she may be involved in day-to-day operations or the development and execution

of strategy, thereby creating an interest in seeing the enterprise carry out its plans to completion.

11.14 As stated earlier, the primary benefit of a contemporaneous valuation performed by an unrelated valuation specialist is its objectivity and the reliability of its information for users of financial statements. Furthermore, the task force believes that, although difficult to quantify in terms of specific dollar amounts, the benefits of obtaining a contemporaneous valuation performed by an unrelated valuation specialist generally outweigh the costs.

11.15 When valuing privately issued securities, the valuation specialist should consider the guidance in paragraphs 36–54B of Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 820-10-35, discussing valuation inputs and the fair value hierarchy. FASB ASC 820, *Fair Value Measurement*, establishes a hierarchy that distinguishes between observable and unobservable inputs as opposed to timing and independence. These concepts operate in tandem in that if quoted prices (unadjusted) in active markets for identical assets or liabilities (level 1 inputs) are not available, fair value should be estimated in accordance with the remainder of the hierarchy described in FASB ASC 820 in a way that maximizes the use of relevant observable inputs and minimizes the use of unobservable inputs.² The task force recommends that valuation of privately issued securities be performed by means selected from the options highlighted in previous paragraphs (contemporaneous versus retrospective valuations and the use of a related versus an unrelated valuation specialist).

11.16 It is management's responsibility to estimate the fair value of the enterprise's common stock after due diligence, deliberation, and consideration of the relevant facts. The task force recommends that the valuation be accompanied by a discussion of the significant factors, assumptions, and valuation techniques used in estimating fair value and a list and discussion of the significant factors contributing to the difference between the fair value so estimated and a subsequent IPO price, if applicable. See chapter 14, "Accounting and Disclosures," for recommended disclosures to be included in management's discussion and analysis.

Postvaluation Events

11.17 An event that could affect the valuation may occur subsequent to the as-of date of the valuation but prior to the issuance of a valuation report. Such an occurrence is referred to as a postvaluation event. The task force has set out two different types of postvaluation events that it recommends be analyzed:

- a. The first type consists of events that were known or knowable to market participants at the as-of date of the valuation (for example, the information that a venture capitalist would seek prior to investing in an enterprise). The valuation would take those events into account because they would generally be considered by market participants.

² It should be noted, however, that FASB ASC 820-10-35-54D provides that "[i]f a reporting entity concludes that there has been a significant decrease in the volume or level of activity for the asset or liability in relation to normal market activity for the asset or liability (or similar assets or liabilities), further analysis of the transactions or quoted prices is needed."

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- b. The second type consists of events that were not known or knowable to market participants at the as-of date of the valuation, including events that arose subsequent to the as-of date of the valuation. The valuation would not be updated to reflect those events. However, the events may be of such nature and significance that they would warrant disclosure in a separate section of the report in order to keep users from being misled.

11.18 The valuation specialist should inquire of management regarding whether management is aware of any postvaluation events through the date of issuance of the valuation report that could provide significant useful information to users of the report. The task force recommends that a valuation specialist obtain a written representation from management regarding post-valuation events and that a statement appear in the valuation report that an inquiry was made of management regarding postvaluation events.

11.19 A postvaluation event is not the same as a *subsequent event*, as defined in FASB ASC 855, *Subsequent Events*. For a valuation that coincides with an enterprise's year-end, for example, a fact may be discovered subsequent to year-end and subsequent to the issuance of the valuation report, but before the issuance of the financial statements, that relates to a matter that existed at the date of the financial statements but was not known as of that date. In those circumstances, such a fact should be reflected in the financial statements at the time they are issued. However, the valuation report, which was prepared with an as-of date of year-end, may not have considered this fact in the valuation. Although the valuation specialist did not incorporate the fact in the valuation in these circumstances, the enterprise has an obligation to consider whether not reflecting that fact in the valuation causes that valuation report effectively to be obsolete.

11.20 Note that if the valuation date in the valuation report and the measurement date for the option grants are different, management would need to consider updating the valuation report if any significant events have occurred.³ For example, if the valuation report is prepared with an as-of date of year-end, but the options were not actually granted until the end of February, any events that took place in January and February would need to be considered in estimating the fair value of the common stock as of the grant date, even if they were not considered in the valuation report.

³ See FASB ASC 718, *Compensation—Stock Compensation*, and 505-50 for guidance on determining the measurement date.

Chapter 12

Common Valuation Questions

Fair Value of Debt

Q&A 12.1: Using the Book Value of Debt in the Valuation of Minority Equity Securities

Q: When estimating equity value for the purpose of valuing minority securities within the enterprise,¹ are there circumstances when it is appropriate to deduct the book value or face value of debt?

A: Because the cash flows to equity are the residual after paying the contractual coupon for the debt, but the cost of capital is measured using the current market yield for the debt, the fair value of debt should be used to estimate the value of the minority securities within the enterprise. In some cases, however, the fair value of debt will approximate its book value or the face value:

- If the debt was issued in an arm's-length transaction on the measurement date, the fair value of debt can be assumed to approximate its book value. Note that the book value of debt is measured net of its original issue discount, so the book value of debt may not be the same as its face value.
- If the debt is prepayable and carries an above-market coupon, it would generally be optimal for the company to pay back the debt early, and the fair value of debt can be assumed to approximate the payoff amount. Note that the payoff amount for the debt is measured based on the face value plus any prepayment penalty and accrued interest, so the payoff amount for the debt may not be the same as its book value or face value.
- If the holders of the debt may demand repayment at a change of control, and a change of control is imminent, the fair value of debt can be assumed to approximate the payoff amount.

Q&A 12.2: Using the Traded Price of Debt in the Valuation of Minority Equity Securities

Q: When estimating equity value for the purpose of valuing minority securities within the enterprise, when is it appropriate to use the traded price of debt as the indication of fair value?

A: The traded price for the debt is the fair value of debt when the debt is the unit of account and provides a good indication of the required market yield for the debt. When valuing minority securities within the enterprise, however,

¹ Readers might find it helpful to refer to Technical Questions and Answers (TIS) sections 6910.34–35, which provide nonauthoritative guidance on investment companies. TIS section 6910.34, "Application of the Notion of Value Maximization for Measuring Fair Value of Debt and Controlling Equity Positions" (AICPA, *Technical Practice Aids*), discusses the application of the notion of value maximization for measuring fair value of debt and controlling equity positions and TIS section 6910.35, "Assessing Control When Measuring Fair Value" (AICPA, *Technical Practice Aids*), discusses assessing control when measuring fair value.

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the fair value of the debt would be considered from the point of view of a market participant buying an equity security in the enterprise rather than a market participant buying debt. Thus, if the due diligence process for the equity transaction would reveal information that the debt markets do not know, then that information would be considered in estimating the fair value of debt for valuing the equity securities. For example, if the debt must be repaid at a change of control, and a change of control is likely to occur prior to the maturity of the debt, the fair value of the debt for valuing the equity securities would assume repayment at that change of control rather than assuming the debt will be held to maturity.

Q&A 12.3: Using the Zero Coupon Bond Equivalent for Including Debt in the Option Pricing Method

Q: For a complex capital structure for an enterprise that includes debt, it is possible to estimate the value of the equity securities using the option pricing method (OPM), either by allocating equity with a levered volatility or by allocating enterprise value using asset volatility and including debt in the model with a breakpoint equal to its zero coupon bond equivalent. In the latter approach, how should the zero coupon bond equivalent be estimated?

A: Because debt typically includes covenants and has interim cash coupons, in most cases, it is best to estimate the fair value of the debt using the yield method, as described in paragraphs 5.15–.18. The zero coupon bond equivalent for the debt is then the breakpoint (future payoff amount for the debt) that results in the model value for the debt equaling its estimated fair value.

Estimating Equity Value Using the Fair Value of Debt

Q&A 12.4: Impact of Estimating Equity Value Using the Fair Value of Debt When Both the Enterprise Value and Fair Value of Debt Have Declined

Q: On March 31, 2X11, an enterprise was acquired by private equity using 75 percent debt. One year later, the enterprise value has fallen by 25 percent, and the fair value of debt has fallen to 80 percent of par. What is the value of equity?

A: In this situation, the equity holders may benefit from allowing time for the enterprise value to recover before the liquidity event. Thus, even though selling the enterprise on the measurement date would result in no value to equity, the equity securities within the enterprise still have value. The value of equity is calculated as follows:

$$\begin{aligned}\text{Equity} &= \text{Enterprise value less fair value of debt}^2 \\ &= 75\% \text{ of original enterprise value less } 80\% \text{ of original debt value} \\ &= 75\% \text{ of original enterprise value less } 80\% \text{ of } 75\% \text{ of original enterprise value}\end{aligned}$$

² Generally, the fair value of debt is used to estimate the value of equity. However, as discussed in Q&A 12.1, there are circumstances in which the fair value of debt will approximate its book value or the face value. For example, the fair value of debt can be assumed to approximate its book value or the face value when the holders of the debt may demand repayment at a change of control, and a change of control is imminent.

= 75% of original enterprise value less 60% of original enterprise value

= 15% of original enterprise value

Thus, the value of equity is now 15 percent of the original enterprise value, compared with 25 percent at the initial transaction date: a 40 percent decline in value. The change in the value of the debt and equity is illustrated as follows:

	<i>Estimated Fair Value as of March 31, 20X1</i>	<i>Estimated Fair Value as of March 31, 20X2</i>	<i>Change in Estimated Fair Value</i>	<i>Percent Change in Estimated Fair Value</i>
Enterprise value	\$100	\$75	(\$25)	-25%
Less: Fair value of debt	<u>75</u>	<u>60</u>	<u>(15)</u>	<u>-20%</u>
Fair value of equity	<u>\$25</u>	<u>\$15</u>	<u>(\$10)</u>	<u>-40%</u>

Q&A 12.5: Impact of Estimating Equity Value Using the Fair Value of Debt When the Enterprise Value Has Remained Unchanged

Q: On March 31, 2X11, an enterprise was acquired by private equity using 75 percent debt. One year later, the goodwill impairment analysis shows that fair value of the enterprise has remained unchanged, but the traded price for the debt has fallen to 90 percent of par. What is the value of equity?

A: Two general types of situations may lead to a decline in the fair value of debt for an enterprise:

- If the enterprise performance is worse than expected, then the credit risk increases, leading to an increase in the cost of debt.
- If debt markets become more risk averse or interest rates rise, the cost of debt may rise even if the enterprise performance is unchanged.

Typically, in both of these situations, the enterprise value will also decline. If the enterprise is not performing well, the enterprise value will fall, and if the cost of capital rises, the enterprise value will fall. However, the example specified that the goodwill impairment analysis shows that the enterprise value (measured on a controlling basis for goodwill impairment purposes) stayed the same. Using this enterprise value and subtracting the fair value of debt would imply that the value of equity has increased over the intervening year, even though the debt value has fallen. The issue is the difference in the way the cost of capital is measured for the goodwill impairment analysis versus the analysis of the fair value of the minority securities.

When valuing the minority equity securities within an enterprise, the enterprise value should be measured considering the company-specific cost of capital through the expected liquidity event, which includes the company-specific cost of debt. In most cases, the company-specific cost of capital is similar to the market-participant cost of capital that would be used in the goodwill

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impairment analysis,³ and the decline in the fair value of debt would imply an increase in the cost of capital used in both analyses and a corresponding decline in the enterprise value.

In certain economic climates, however, the market yields for high-leverage or high-risk debt may increase even when the market yields for lower-leverage, lower-risk debt stay the same or decline. Thus, if the enterprise is overleveraged compared to the norms for the industry, the company-specific cost of capital may be higher than the cost of capital used in estimating the fair value of the enterprise for goodwill impairment. In that case, it may be possible that the goodwill analysis will show that the fair value of the enterprise has remained unchanged, even though the enterprise value for the purpose of valuing the minority securities has declined. In general, when thinking about the change in equity value from one period to the next, the equity value used for valuing minority securities would not be expected to rise when the fair value of debt has fallen.

Valuing Equity Securities in Complex Capital Structures

Q&A 12.6: Current Value Method

Q: When is it appropriate to use the current value method?

A: The current value method indicates the value of the securities if the enterprise were to be sold at the measurement date. Thus, it is an appropriate methodology if a liquidity event is imminent or in certain other situations, as discussed in paragraph 6.46. It also may be an appropriate methodology for certain types of valuations outside the scope of this guide when the valuation premise is the sale of the enterprise rather than the sale of the securities within the enterprise.

Q&A 12.7: Fair Value of Securities Issued by Partnerships and Limited Liability Companies

Q: Do the methodologies discussed in this guide apply to partnership and limited liability company interests?

A: Yes, these methodologies apply for estimating the fair value for financial reporting purposes of partnership and limited liability company interests issued as compensation.

Q&A 12.8: Treatment of Options in the OPM

Q: When including employee stock options within the OPM, how should the cash from option exercise be treated?

A: Option holders have a choice of whether or not to exercise their options depending on whether their options are "in the money" at the exercise date.

³ As leverage increases, the cost of debt and cost of equity also increase, but this increase is offset by the increased percentage of capital funded by debt and the increased tax savings. Thus, the weighted average cost of capital (WACC) is relatively constant across a wide range of capital structures. For example, for high-leverage private equity-backed firms, the high percentage of debt allows high returns to equity, as demanded by these investors. WACC increases if leverage is high enough to lead to a significant perceived risk of bankruptcy and the associated financial distress, which erode enterprise value. Thus, if the enterprise is overleveraged, the company-specific WACC will be higher than the market-participant WACC. It would be unusual for the company-specific WACC to be lower than the market-participant WACC.

In the OPM, the model assesses whether it is optimal for the preferred stock to convert and employee stock options to exercise based on the future value of equity. For simplicity, the OPM uses a single time to liquidity to represent the time when these decisions are made. The payoff to the employee stock options equals the value of the underlying security less the strike price. Thus, one approach for incorporating the dilution impact of options into the OPM would include a breakpoint corresponding to each strike price, capturing the equity value at which it would be optimal for the options to exercise. It would not be appropriate to add the expected proceeds from option exercise to the total equity value used in the OPM.

Q&A 12.9: Fair Value of Securities in a Roll-Up Structure

Q: A newly formed enterprise with no current operations plans to grow by acquiring a series of subsidiaries. The private equity investors in this enterprise have agreed to fund these acquisitions as management identifies good targets through the issuance of additional debt-like preferred stock. Management was issued incentive units for 10 percent of the common stock; the rest of the common stock is held by the private equity investors. How should the common stock be valued?

A: In this structure, the common stock is effectively an option, capturing the upside appreciation in the enterprise value. Because the acquisitions will be funded by debt-like preferred stock that is not dilutive to the common stock, the expected value of the common stock would be measured relative to the entire expected capital investment, not just the investments that have already been completed. That is, if the company expects to acquire five businesses at \$50 million each, the base asset value is \$250 million, and the common stock represents an option on that \$250 million asset value with a strike price equal to the expected liquidation preference for the debt-like preferred stock of \$250 million plus dividends, if any. To capture the uncertainty in the number of acquisitions and the value of each acquisition, one approach would be to employ a scenario analysis, estimating the probability that the enterprise will acquire only one business, two businesses, and so on, up to the entire target investment. To capture the impact of the timing of the acquisitions and the change in value between acquisition dates, one approach would be to employ a simulation model, treating each additional acquisition date as a step in the model. The value of the common stock would then be modeled as the payoff at the liquidity event, discounted back to the measurement date.

Q&A 12.10: Discount Rate Used in the Probability-Weighted Expected Return Method

Q: Is it appropriate to apply conditional discounts in a probability-weighted expected return method (PWERM)?

A: In a PWERM, the value of the securities is estimated considering the expected payoff to the securities at the liquidity event, discounted back to the measurement date at a risk-adjusted rate of return. As discussed in paragraphs 4.26–.28, the discount rate for these expected cash flows should consider the risk inherent in the expected cash flows, which will be higher than the risk-free rate but lower than the discount rates associated with "success" cash flows. In addition, as discussed in paragraph 6.24, the discount rate may vary between the senior and junior securities within the capital structure, reflecting the rate of return that investors in each class of securities would demand. In general,

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however, it is most appropriate to think of the PWERM as reflecting the expected cash flows and to choose a discount rate appropriate to those cash flows rather than selecting a conditional discount rate for each PWERM scenario.

Q&A 12.11: Measuring Volatility for Early-Stage Companies

Q: An early-stage company makes an innovative product that is used for environmentally friendly construction. The company's only competitor is BigCo, a highly diversified business with a \$20 billion market cap. Is it appropriate for the valuation specialist to use BigCo as a comparable for measuring volatility?

A: No. Because BigCo is a large, highly diversified business, its overall performance is driven by successes in some product lines balanced by failures in others. High diversification leads to low volatility. In contrast, for an early-stage company with only one product, the company's overall performance is driven by the success or failure of that single product. Therefore, it is more appropriate to select comparables that may not be direct competitors but that are more similar in size and level of diversification.

Control and Marketability

Q&A 12.12: Marketability of Investor Interests

Q: Should investor interests be considered marketable? How should the marketability of the investor shares be considered when solving for the equity value implied by a transaction?

A: The Equity Securities Task Force recommends that for the purpose of valuing minority equity securities within the enterprise, the value of the enterprise should be measured considering the cash flows under current ownership and the investors' required rate of return. Thus, interests held by the investors who in aggregate have control of the business⁴ would be considered as marketable as the enterprise measured on this basis.

In some cases, there will be certain investors who do not have the same information and control rights as the investors who in aggregate have control of the business. To the extent that the lack of these features would limit access to the same principal market, it would be appropriate to consider these interests to be less marketable.

When solving for the equity value implied by a transaction, if the transaction includes information rights and control features consistent with those held by the investors who in aggregate have control of the business, no adjustment would be needed. If the transaction is for a small interest that does not include these features, then adjustments to the price may be considered. See chapter 8,

⁴ These investors typically have the ability to decide the timing of additional financings and the ultimate liquidity event. In addition, these investors typically have additional rights, such as information rights and various control features, that would allow a new investor to conduct a due diligence process and that give them the ability to protect their investment. Note that the enterprise value would still be measured on a minority basis (that is, based on the cash flows under current ownership and the investors' required rate of return). It would not typically be appropriate to aggregate the investor interests to estimate the enterprise value on a controlling basis or to assume an immediate sale of the enterprise.

"Inferring Value From Transactions in a Private Company's Securities," for more discussion of this issue.

Q&A 12.13: Comparison Between the Fair Value of the Enterprise and the Value of the Enterprise Used for Valuing Minority Interests

Q: How does the fair value of the enterprise, measured considering a transaction for the entire enterprise on a controlling basis, compare with the value of the enterprise used for valuing minority interests, measured considering the cash flows under current ownership and the investors' required rate of return?

A: As discussed in paragraph 5.03, the fair value of the enterprise and the value of the enterprise used for valuing minority interests are not necessarily the same. A difference in the values used for these two purposes may arise due to differences in the cash flows and cost of capital. For example, in a privately held enterprise, there may be some expenses that the company bears under current ownership that would not be considered in estimating the fair value of the enterprise but would apply in valuing the minority interests. In addition, because private equity-backed enterprises are typically more levered than public comparables, the cost of capital would consider the benefits of this higher leverage offset by the higher equity rate of return these investors demand. If the enterprise is overleveraged, the cost of capital will rise, decreasing the value of the minority interests. Nevertheless, typically, the value of the enterprise used for valuing minority interests will be close to, or the same as, the fair value of the enterprise.

Q&A 12.14: Applying Discounts for Lack of Marketability to the Total Equity Value

Q: Is it appropriate to apply a discount for lack of marketability to the total equity value?

A: A discount for lack of marketability reflects an adjustment to the calculated values from the model to reflect differences in the value for specific securities that are not otherwise captured by the model, considering the principal market for those specific securities. Therefore, it generally would not be appropriate to apply a discount for lack of marketability to the total equity value.

Q&A 12.15: Discounts for Lack of Marketability and Control When the Enterprise Has a Simple Capital Structure

Q: A private equity firm has recently purchased an enterprise at a price of \$500 million, including \$200 million in equity structured as 20 million common shares at \$10 per share, plus \$300 million in third-party debt. To incentivize the employees, the private equity firm also issued 1 million common shares to management, bringing the total number of shares to 21 million. Do these management shares have the same value as the investor's shares?

A: When both investors and management hold the same interests, there is no explicit difference in economic rights. Hence, any difference in value between the investor and management interests would be due to differences in the principal market. Factors that may indicate an additional discount for lack of marketability would apply to the management interests include the following:

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- Investor shares have different contractual rights, such as information rights, rights to a board seat, right of first refusal, tag-along and drag-along rights, and so on, as described in paragraphs 6.11–.13. Market participants in the principal market for the management interests would demand a higher rate of return due to the additional risks associated with the lack of these rights.
- The management shareholders do not have the ability to allow a potential buyer to conduct a due diligence process.

Factors that may indicate that no additional discount for lack of marketability would apply to the management interests include the following:

- There is evidence that market participants in the principal market for the management interests are willing to pay the same price as the market participants for the investor interests, even though they do not have the same information and control rights. For example, if one or more unrelated third-party investors purchase shares that have the same rights and restrictions as the management shares, it implies that the management shares have the same value as these third-party shares, which is typically the same price that was paid by the investors who in aggregate have control of the business.
- The enterprise or its investors are likely to create a market for the management interests and would not apply a discount in establishing the price in this market. For example, many private equity investors will repurchase shares if an employee leaves the company, and the repurchase price typically would not include a discount.

Note that in some cases, certain members of management (typically, the CEO, founders, or other top executives) will have a different principal market than the broader management team. For example, the CEO's shares typically have information rights that would allow a potential buyer to conduct a due diligence process when the shares held by other members of management would not. In addition, the CEO or other top executives may negotiate a put right with the private equity investor, providing an explicit principal market. Many private equity firms use an incentive structure in which the top executives receive shares, and the broader employee group receives options. In such a structure, it would be appropriate to assess separately the principal market and discount for lack of marketability for these two groups. In particular, if the top executives purchase shares at the same price as the investors who in aggregate have control of the business, it would not necessarily imply that the shares underlying the options issued to a broader group of employees are marketable.

Information to Be Considered in the Valuation

Q&A 12.16: Postvaluation Event (Customer Financial Condition) — Assessment as Known or Knowable

Q: A valuation specialist, as of the valuation date of December 31, 2X10, is not aware that a major customer of the enterprise being valued filed for bankruptcy protection in late December. Consequently, the filing was not considered in the valuation assumptions. If the valuation specialist becomes aware of the

bankruptcy filing in late January 2X11, prior to issuance of the valuation report, should he or she consider the possible effects of the filing on the valuation as of December 31, 2X10?

A: Yes. Because the filing was a matter of public record, it was known or knowable by market participants as of December 31, 2X10, and should be reflected in the report to the extent that it would affect the valuation.

Q&A 12.17: Postvaluation Event (Product Approval)—Assessment as Known or Knowable

Q: A valuation specialist is conducting a pharmaceutical company's stock valuation on February 1, 2X11, for the valuation date of December 31, 2X10. As of December 31, 2X10, the Food and Drug Administration (FDA) was in the process of approving a new drug for the company; however, management of the company did not know whether the drug would be approved. Management was hopeful that the drug would be approved in the near future. Approval of the drug was obtained on January 25, 2X11. Would the valuation specialist consider the drug approval event as part of the December 31, 2X10, stock valuation?

A: No. The actual drug approval event would not be considered in the stock valuation as of December 31, 2X10, because it was not known or knowable by market participants as of that date whether the drug approval event was going to occur on January 25, 2X11. The valuation specialist should consider the fact that the company has a drug with potential FDA approval when trying to value the stock of the company on December 31, 2X10. However, the valuation specialist should not base the company's stock valuation on the fact that the FDA approval had been subsequently obtained but, instead, should base it on the likelihood of approval as of December 31, 2X10. That is, the fair value estimate as of December 31, 2X10, should be the same, regardless of whether FDA approval was subsequently obtained or denied. The valuation specialist may want to consider disclosure in the valuation report of the subsequent FDA action. However, if the options were not formally granted on December 31, 2X10, but, instead, after January 25, 2X11, then the FDA approval should be taken into account, and the valuation specialist may be asked to update the report to the actual date of the grant.

Q&A 12.18: Expected Financing—Effect on Valuation

Q: An enterprise, as of the valuation date of December 31, 2X10, is in negotiations for financing that is expected to occur in February 2X11. Should the "impending" financing be reflected in the valuation?

A: Financing events are uncertain until they actually occur; thus, it is not known or knowable by market participants as of December 31, 2X10, that the enterprise will definitely obtain the financing. However, the valuation specialist should consider the likelihood of possible event outcomes that existed as of the valuation date, including the likelihood of the financing event.

In some cases, it is necessary to simulate the future equity value long before it is knowable. For example, to value a security with down-round protection, the valuation should consider the evolution in the equity value over the period until the next financing round, solve for the price of the next financing round, and then consider how that price affects the previous securities. These valuations should use a simulation or lattice model beginning with the current equity

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value rather than using management's best estimate of the pricing of the next round.

Shelf Life of a Valuation

Q&A 12.19: Shelf Life of a Valuation

Q: An enterprise has a contemporaneous valuation performed as of July 31, the date on which stock options are granted to employees. A month or two later, the enterprise fills its controller position vacancy and grants the controller a number of stock options. Under what circumstances can the earlier valuation be used for purposes of estimating compensation expense for the options granted to the controller?

A: In financial reporting, there is no bright line for estimating the shelf life of a valuation.⁵ Instead, the shelf life of a valuation depends on the specific facts and circumstances and is inversely related to the number and significance of the events that have taken place since the valuation date. That is, it may be appropriate to use the earlier valuation if no significant events that would affect the enterprise's value, such as milestones or progress toward a near-term IPO, have occurred during the intervening period. In short, when considering the appropriateness of using an earlier valuation, it is important to exercise professional judgment.

Q&A 12.20: Shelf Life of Value-Related Information

Q: A private enterprise issued common stock to an *unrelated party* for \$20 per share on January 1, 2X11. On June 10, 2X11, the enterprise granted common stock to employees. The enterprise operates in an industry in which both pricing and demand for products have a history of volatility. For 2X11, the enterprise forecasts a 30 percent growth rate in sales. Would the equity transaction on January 1, 2X11, be an appropriate indicator of the fair value of the enterprise's stock on June 10, 2X11?

A: Generally, no. It is generally not considered reasonable to expect the value of a share of stock to have the same value that it had several months earlier. This would particularly be the case for an enterprise that experiences more volatility than a mature or zero-growth enterprise. However, the January 1, 2X11, value combined with other objective and substantive evidence may assist the enterprise in estimating a fair value on June 10, 2X11. See paragraphs 11.06 and 13.11 for additional discussion on frequency and timing of valuation report issuance.

⁵ Note that for tax purposes, under Internal Revenue Code (IRC) Section 409(A), there is a presumption of reasonableness for valuations performed by an independent appraiser no more than 12 months before the measurement date (IRC Section 409A-1[b][5][iv][B][2][i]). However, a valuation will be deemed unreasonable if it "fails to reflect information available after the date of the calculation that may materially affect the value of the corporation (for example, the resolution of material litigation or the issuance of a patent) or the value was calculated with respect to a date that is more than 12 months earlier than the date for which the valuation is being used" (IRC Section 409A-1[b][5][iv][B][1]). Thus, for both financial reporting and tax purposes, it is important to consider whether there have been significant events between the valuation date and grant date; tax regulations, however, provide more explicit guidance regarding the shelf life of the valuation in the absence of such events.

Chapter 13

Elements and Attributes of a Valuation Report

13.01 The preceding chapters of this guide identify and analyze the various approaches to valuation and components of value. In those chapters, the Equity Securities Task Force (task force) recommends that privately held enterprises retain the services of an unrelated valuation specialist. This chapter sets forth the specific elements that, when applicable, should be included in a valuation report, whether it is prepared by an unrelated or related-party valuation specialist. In addition to identifying the elements, this chapter also discusses the attributes of a valuation report that the task force considers best practices.

13.02 The valuation specialist's report does not constitute an examination, a compilation, or an agreed-upon procedures report, as described in AT section 301, *Financial Forecasts and Projections* (AICPA, *Professional Standards*). Nonetheless, the valuation specialist performs procedures necessary to satisfy himself or herself that forecasted financial information (for example, expected cash flows) is objectively verifiable, reliable, relevant, and useful to the valuation process. Best practices suggest (and some valuation standards require) that the valuation specialist state in the valuation report that he or she does not provide assurance on the achievability of the forecasted results because events and circumstances frequently do not occur as expected; differences between actual and expected results may be material; and achievement of the forecasted results is dependent on actions, plans, and assumptions of management.

13.03 The task force recommends that all valuation reports be in writing. Auditors and regulators normally require a written report because they routinely will seek to review such report and, in some circumstances, may want to review supporting documentation as well. The task force also recommends that there be a written engagement letter between management and the valuation specialist, although such letter typically is not included in the valuation report. Because the engagement letter formally documents the agreed-upon terms and scope of the valuation engagement, it helps avoid misunderstandings and is, therefore, in the interest of both management and the valuation specialist.

13.04 The task force recommends that valuation reports follow the reporting provisions of Statement on Standards for Valuation Services (SSVS) No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100). SSVS No. 1 provides for either a detailed report or summary report for a valuation engagement. According to SSVS No. 1, a detailed report is structured to provide sufficient information to permit users to understand the data, reasoning, and analyses underlying the valuation analyst's conclusion of value. A summary report is structured to provide an abridged version of the information that would be provided in a detailed report.¹

¹ Certain provisions of Statement on Standards for Valuation Services (SSVS) No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100), are discussed in this chapter. For further discussion regarding reporting provisions see "The Valuation Report" section in SSVS No. 1.

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13.05 SSVS No. 1 provides for the following sections of a detailed report:

- Letter of transmittal
- Table of contents
- Introduction
- Sources of information
- Analysis of the subject entity and related nonfinancial information
- Financial statement/information analysis
- Valuation approaches and methods considered
- Valuation approaches and methods used
- Valuation adjustments
- Nonoperating assets, nonoperating liabilities, and excess or deficient operating assets (if any)
- Representation of the valuation analyst
- Reconciliation of estimates and conclusion of value
- Qualifications of the valuation analyst
- Appendixes and exhibits

13.06 SSVS No. 1 also provides that the information in the report should be sufficient to enable the intended user of the report to understand the nature and scope of the valuation engagement, as well as the work performed. SSVS No. 1 suggests the following information be provided in the report:

- a. Identity of the client
- b. Purpose and intended use of the valuation
- c. Intended users of the valuation
- d. Any restrictions on the use of the report
- e. Identity of the subject entity
- f. Description of the subject interest
- g. Whether the business interest has ownership control characteristics and its degree of marketability
- h. Valuation date
- i. Report date
- j. Type of report issued
- k. Applicable premise of value
- l. Applicable *standard of value*
- m. Assumptions and limiting conditions
- n. Any restrictions or limitations in the scope of work or data available for analysis
- o. Any hypothetical conditions used in the valuation engagement, including the basis for their use
- p. If the work of a specialist was used in the valuation engagement, a description of how the specialist's work was relied upon
- q. Disclosure of subsequent events in certain circumstances
- r. Any application of the jurisdictional exception
- s. Any additional information the valuation analyst deems useful to enable the user(s) of the report to understand the work performed

13.07 The task force recommends that a valuation report be written so as to enhance the ability of management to

- a. evaluate the valuation specialist's knowledge of the enterprise and industry.
- b. determine whether the valuation specialist considered all factors relevant to the valuation.
- c. understand the assumptions, models, and data the valuation specialist used in estimating fair value; evaluate for reasonableness those assumptions and data; and evaluate for appropriateness those models.

13.08 The task force recommends that a valuation report be comprehensive, well organized, and written clearly. This will help provide the needed assurance to users of the report that the valuation specialist has a thorough understanding of the enterprise, the industry in which it operates, and all the other factors the valuation specialist should consider in performing the valuation. (See chapter 3, "Factors to Be Considered in Performing a Valuation.") A well-written report that is clear and concise is likely to save both time and money because it facilitates a better understanding by readers of the valuation specialist's assumptions and results.

13.09 The following is a list of other information the task force recommends also be included in a valuation report, when applicable and appropriate. Some but not all of the items in the list can also be found in IRS Revenue Ruling 59-60, which sets forth items the IRS has determined should be considered when preparing a valuation analysis for tax purposes:

- a. A summary of current and future general economic conditions that have an effect on the operating environment of the enterprise being valued (for example, growth, trade and federal deficits, inflation, unemployment, interest rates, corporate profits, and financial markets)
- b. An overview of, and outlook for, the specific industry in which the enterprise operates, including a discussion of the size of the industry, a description of market niches within the industry, and a discussion of historical and future trends
- c. An overview of the enterprise's operations and its technologies, including information on enterprise formation and organization, business segments, principal products and services, customer base, competitors, key risks faced by the enterprise, sales and marketing strategies, patents and intellectual property rights, management team, and facilities
- d. An assessment of the key value drivers of the enterprise (for example, access to capital)
- e. A discussion of the enterprise's historical and expected financial performance using various analytical procedures, trend analyses, and operating ratios and a discussion and analysis of relevant non-financial measures (for example, order backlog for a manufacturer, occupancy rates for a hotel, or percentage of hits resulting in purchases for a website)
- f. A complete discussion of the valuation approaches and methods considered and the approaches and methods determined to be

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appropriate or inappropriate in the valuation of the enterprise, including a discussion of the factors considered (see paragraph 1.15) in making that determination

- g.* A complete discussion of the assumptions and calculations of the valuation, including the final estimate of value based on those assumptions and calculations and a discussion of the factors considered (see paragraph 3.19) in estimating the value
- h.* A statement regarding whether the report was prepared by an unrelated or related-party (for example, management or the board) valuation specialist and, if the report was prepared by a related party, the nature of the relationship and the risks of related-party preparation
- i.* A statement that the valuation specialist does not provide assurance on the achievability of the forecasted results because events and circumstances frequently do not occur as expected; differences between actual and expected results may be material; and achievement of the forecasted results is dependent on actions, plans, and assumptions of management

13.10 As discussed in chapter 11, "Reliability of the Valuation," the task force recommends that privately held enterprises use unrelated valuation specialists. Regardless of whether a valuation is performed by a related party or unrelated party, the preparer should have the necessary expertise and qualifications (see appendix C, "Criteria for the Selection of a Valuation Specialist") to perform a valuation. Furthermore, any valuation performed by a related-party valuation specialist should be performed in accordance with the same guidelines that an unrelated valuation specialist would use, and a related-party valuation specialist's report should have the same attributes as a report prepared by an unrelated valuation specialist. Refer to footnote 1 in paragraph 11.01.

13.11 Normally, an initial valuation report prepared for an enterprise is a detailed report containing all the elements noted in paragraphs 13.05–.06. Often, however, a number of reports are issued at appropriate intervals, particularly when an enterprise is actively issuing stock or stock options. Under those circumstances, it is acceptable to issue at those intervals a summary report. Summary reports may be issued as updates of the most recently issued full comprehensive report. Those updates generally are acceptable if issued within one year of that full comprehensive report, and (a) no significant event, such as a milestone event, has occurred; (b) no significant event expected to have occurred has been delayed or otherwise not yet occurred; and (c) no major rounds of financing have occurred. Although detailed reports have the advantage in that they document in detail consideration of all the relevant issues as of the report date, it may be cost beneficial for summary reports to be prepared instead under these circumstances. Summary reports prepared and issued as appropriate for an enterprise's circumstances—but no less frequently than, for example, every 3–6 months—would be adequate to capture the changes in an enterprise's business outlook unless a significant or material change has taken place. If an initial public offering is on the horizon (for example, within 12 months of occurrence), then more frequent issuance of reports is considered preferable to less frequent issuance.

13.12 The task force recommends that point estimates of value, rather than ranges of value, be used whenever possible.² In certain circumstances, a valuation specialist may provide management with a narrow range of valuations within which the valuation specialist considers that no estimate of value is a better estimate than any other value in the range. In those circumstances, there would be a rebuttable presumption that management would use the midpoint of the range as its point estimate of value. The task force believes that the midpoint provides the most unbiased estimate of value in such circumstances.

13.13 Some valuation specialists perform a sensitivity analysis to determine the effect on the valuation of varying specific factors and assumptions. A sensitivity analysis may provide information useful in assessing the most sensitive variables used in the preparation of the valuation report. Sensitivity analysis is not a technique to calculate a range of values; rather, it is a technique to determine the hypothetical effect of changes in the underlying factors and assumptions on the estimate of value.

13.14 However, there may be some practical difficulties in performing multivariate analyses. Attempting to isolate the effects of single changes in each of several factors or assumptions or to determine the effects of combinations of changes in those factors or assumptions may be a complex, time-consuming undertaking. Because the valuation process should allow for the identification of critical variables, it is generally sufficient for the valuation specialist to note those variables in the report.

13.15 As noted in paragraphs 1.16, 3.19, and 9.03, a valuation specialist should assess, rather than calculate a simple average of, the results of different valuation approaches. Although it is less prevalent today, some practices in the past have included averaging of various valuation approaches without weighting them. Court cases, as well as IRS rulings, have limited this practice as valuation procedures have become more sophisticated, and the qualifications of valuations specialists have increased. Recently, the courts expect to receive a well-reasoned valuation report; simple averages of different results are generally not acceptable.³ To the extent that a valuation specialist estimates value using a weighted average, it is reasonable to expect the valuation specialist to support that estimate with a robust explanation.

² Financial statements often contain amounts based on estimates, and accounting principles generally accepted in the United States of America generally do not require enterprises to present ranges of financial statement amounts that reflect the corresponding ranges of estimates. As of the writing of this guide, few accounting standards contained guidance on disclosing the effects of changes in assumptions (for example, Financial Accounting Standards Board *Accounting Standards Codification* 715-20-50, which contains disclosure requirements for defined benefit plans).

The valuation specialist ordinarily does not include such disclosure in a valuation report. The Equity Securities Task Force recommends, however, that management consider the requirements of Securities and Exchange Commission (SEC) Release No. FR-60, *Cautionary Advice Regarding Disclosure About Critical Accounting Policies*, and section V, "Critical Accounting Estimates," of SEC Release No. FR-72, *Commission Guidance Regarding Management's Discussion and Analysis of Financial Condition and Results of Operations*.

³ This conclusion has been supported in concept by IRS Revenue Ruling 59-60, which states, in part

Because valuations cannot be made on the basis of a prescribed formula, there is no means whereby the various applicable factors in a particular case can be assigned mathematical weights in deriving the fair market value. For this reason, no useful purpose is served by taking an average of several factors (for example, book value, capitalized earnings and capitalized dividends) and basing the valuation on the result. Such a process excludes active consideration of other pertinent factors, and the end result cannot be supported by a realistic application of the significant facts in the case except by mere chance.

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13.16 As noted in paragraph 13.05, a valuation report should include an enumeration of the valuation specialist's professional qualifications, including experience, education, and credentials or professional designations. Although this guide does not endorse any one designation, it does recognize that there are professional designations that are well known and recognized in the valuation community. Specific professional designations related to enterprise valuation are recommended. In their absence, the valuation specialist should include a discussion or list of the reasons why he or she is qualified to perform the valuation. See appendix C for related considerations of management in the selection of a valuation specialist.

Chapter 14

Accounting and Disclosures

Accounting

14.01 Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 718, *Compensation—Stock Compensation*, and 505-50 provide guidance on how to account for transactions in which an entity exchanges its equity instruments for goods or services. FASB ASC 718 addresses share-based payments to employees, and FASB ASC 505-50 addresses share-based payments to nonemployees. These FASB ASC topics also address transactions in which an entity incurs liabilities in exchange for goods or services that are based on the fair value of the entity's equity instruments or that may be settled by issuance of those equity instruments.

14.02 FASB ASC 718 requires entities to recognize the cost of employee services received in exchange for awards of equity instruments based on the grant-date fair value of those awards (a fair value-based measurement), with limited exceptions. The cost is then recognized over the period during which an employee is required to provide service in exchange for the award (the requisite service period), which is usually the vesting period.

14.03 FASB ASC 505-50 states that the overall objective of accounting for share-based payment transactions in which an entity exchanges goods or services with nonemployees is to recognize in the financial statements the most reliably measurable fair values of such transactions. FASB ASC 505-50 provides guidance on determining the measurement date and recognition approach for equity instruments issued in share-based payment transactions with nonemployees.¹

14.04 Topic 14, "Share-Based Payment," of the Securities and Exchange Commission's (SEC's) *Codification of Staff Accounting Bulletins* (created by Staff Accounting Bulletin [SAB] No. 107 and updated by SAB No. 110), which represents guidance applied by public companies, expresses views of the SEC staff regarding the interaction of FASB ASC 718 and 505-50 with certain SEC rules and regulations and provides the SEC staff's views regarding the valuation of share-based payment arrangements for public companies. A few of the more specific areas in which the interpretations in this topic are applicable to concepts contained in this guide are related to the transition from nonpublic to public status; valuation methods (including assumptions such as expected volatility and expected term); and the use of the simplified method, a method by which an entity can estimate the expected term when it is unable to rely on its historical exercise data.

Existing Financial Statement Disclosure Requirements

14.05 FASB ASC 718 establishes disclosure requirements for share-based payment arrangements. Specifically, FASB ASC 718-10-50-1 indicates that an

¹ Although the final measurement date and some underlying assumptions (for example, expected term) may differ between employee and nonemployee awards, the Equity Securities Task Force (task force) believes the measurement principle for the underlying security is the same. Accordingly, the task force believes this guide would be equally applicable to both employee and nonemployee awards.

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entity with one or more share-based payment arrangements should disclose information that enables users of the financial statements to understand all of the following:

- The nature and terms of such arrangements that existed during the period and the potential effects of those arrangements on shareholders
- The effect of compensation cost arising from share-based payment arrangements on the income statement
- The method of estimating the fair value of the goods or services received, or the fair value of the equity instruments granted (or offered to grant), during the period
- The cash flow effects resulting from share-based payment arrangements

14.06 FASB ASC 505-50-50-1 indicates that for share-based payment transactions with nonemployees, an entity should provide disclosures similar to those required by paragraphs 1–2 of FASB ASC 718-10-50, to the extent that those disclosures are important to an understanding of the effects of those transactions on the financial statements.

14.07 FASB ASC 718-10-50-2 and paragraphs 134–137 of FASB ASC 718-10-55 indicate the minimum information needed to achieve the disclosure objectives outlined in FASB ASC 718-10-50-1 and illustrate how these disclosure requirements might be satisfied. In some circumstances, an entity may need to disclose information beyond that listed in those FASB ASC sections to achieve the disclosure objectives.

14.08 FASB ASC 275-10 requires disclosures about risks and uncertainties that could significantly affect the amounts reported in the financial statements. Because the valuation of privately issued equity securities involves the use of estimates and judgments, the enterprise should consider whether to provide any of the disclosures specified in FASB ASC 275-10 in addition to those required under FASB ASC 718.

14.09 FASB ASC 718 and 505-50 set forth guidance on valuation of equity instruments (including privately held company equity securities) when those instruments are awarded for goods or services. In general, FASB ASC 718 and 505-50 rely on the concept of fair value; however, the application of fair value in those arrangements does not factor in certain types of vesting provisions and provides for a few other exceptions to fair value (for example, reload features). As such, the measurement method in FASB ASC 718 and 505-50 is commonly referred to as fair value based.

14.10 FASB ASC 820, *Fair Value Measurement*, defines *fair value*, sets out a framework for measuring fair value, and requires disclosures about fair value measurements. FASB ASC 820 applies when another FASB ASC topic requires or permits fair value measurements or disclosures about fair value measurements; however, FASB ASC 820-10-15-2 states that the guidance in FASB ASC 820 does not apply to accounting principles that address share-based payment transactions. Therefore, FASB ASC 820 is not required to be used as definitive guidance when valuing share-based payments granted under FASB ASC 718 or 505-50. However, while acknowledging that the measurement principle under FASB ASC 718 or 505-50 is fair value based, largely

because prevesting conditions are not considered in the calculation of compensation cost, there are concepts within FASB ASC 820 that may be helpful when measuring the cost of share-based payments. This is because the measurement guidance in FASB ASC 718 and 505-50 is largely based on a market exchange notion, and such measurements under FASB ASC 718 and 505-50 encompass such concepts as market participant assumptions, restrictions following the security, nonperformance risk for liabilities, and so on.

14.11 The Equity Securities Task Force (task force) also believes that FASB ASC 820 contains many concepts that entities may find helpful when estimating the fair value of the underlying equity shares in a share-based payment award measured under FASB ASC 718 or 505-50. Therefore, the task force recommends referring to the general measurement guidance in FASB ASC 820 for purposes of estimating the fair value of the underlying equity shares that is used to measure a share-based payment award issued within the scope of FASB ASC 718 or 505-50.

Recommended Financial Statement Disclosures for an Initial Public Offering

14.12 In addition to the disclosure requirements in FASB ASC 718, the task force recommends that financial statements included in a registration statement for an initial public offering (IPO) disclose, at a minimum, the following information for equity instruments granted during the 12 months² prior to the date of the most recent balance sheet (year-end or interim) included in the registration statement:

- a. For each grant date, the number of equity instruments granted, the exercise price and other key terms of the award, the fair value of the common stock at the date of grant, and the intrinsic value, if any, for the equity instruments granted (the equity instruments granted may be aggregated by month or quarter and the information presented as weighted average per share amounts)
- b. Whether the valuation used to determine the fair value of the equity instruments was contemporaneous or retrospective

Recommended Management's Discussion and Analysis Disclosures in an IPO

14.13 The task force recommends that management's discussion and analysis (MD&A) in a registration statement for an IPO include the following information relating to equity instruments granted during the 12 months prior to the date of the most recent balance sheet (year-end or interim) included in the registration statement, in addition to the disclosures required by SEC rules. The task force believes these disclosures would assist readers in assessing the inputs the enterprise used to develop measurements related to share-based compensation and the effects of those measurements on earnings for the period, as follows:

² An enterprise has a responsibility for appropriately estimating the fair value of shares of stock awards or stock underlying stock options for any periods for which financial statements are presented in accordance with accounting principles generally accepted in the United States of America. Prior to undertaking an initial public offering (IPO), enterprises often focus most on stock options issued within 12 months of an IPO; however, enterprises should be cognizant of this responsibility for all periods.

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- a. A discussion of the significant factors, assumptions, and valuation techniques used in estimating the fair value of the securities.³ With respect to assumptions, they are often highly correlated; therefore, it may not be helpful to disclose just one or two of the assumptions.
- b. A discussion of each significant factor contributing to the difference between the fair value as of the date of each grant and the estimated IPO price. These disclosures would generally include significant intervening events and reasons for changes in assumptions, as well as the weighting of expected outcomes and selection of valuation techniques employed, to the extent useful to readers. Such disclosures would generally be made each period in which fair value was estimated.

Disclosure Example

14.14 The following example illustrates the additional recommended disclosures in a registration statement and does not include the disclosures required by FASB ASC 718, as referenced in paragraphs 14.05–.07. An enterprise should provide all appropriate disclosures pursuant to that FASB ASC topic.

14.15 This example is provided solely for illustration purposes; each disclosure should be based on the individual facts and circumstances of each transaction and its related valuation.⁴

³ If a company discloses that any such factors, assumptions, or valuation techniques were developed by a valuation specialist and relied upon by management, such disclosure in a registration statement or prospectus filed with the Securities and Exchange Commission (SEC) would result in a requirement to provide the name and written consent of the valuation specialist under Rule 436, "Consents Required in Special Cases," of the Securities Act of 1933 (the 1933 Act). A registrant has no requirement to make reference to a valuation specialist simply because the registrant used or relied on the valuation specialist's report or valuation or opinion in connection with the preparation of a registration statement under the 1933 Act. The consent requirement in Section 7(a) of the 1933 Act applies only when a report, valuation, or opinion of an expert is included or summarized in the registration statement and attributed to the valuation specialist and, thus, becomes "expertised" disclosure for purposes of Section 11(a) of the 1933 Act, with resultant Section 11 liability for the valuation specialist and a reduction in the due diligence defense burden of proof for other Section 11 defendants with respect to such disclosure, as provided in Section 11(b) of the 1933 Act. For example, if a registrant discloses purchase price allocation figures in the notes to its financial statements and discloses that these figures were taken from, or prepared based on, the report of a valuation specialist or provides similar disclosure that attributes the purchase price allocation figures to the valuation specialist, not the registrant, then the registrant should comply with Rule 436 with respect to the purchase price allocation figures. On the other hand, if the disclosure states that management or the board prepared the purchase price allocations and, in doing so, considered or relied in part upon a report of a valuation specialist or provides similar disclosure that attributes the purchase price allocation figures to the registrant, not the valuation specialist, then there would be no requirement to comply with Rule 436 with respect to the purchase price allocation figures because the purchase price allocation figures are attributed to the registrant. Independent of Section 7(a) considerations, a registrant that uses or relies on a valuation specialist's report, valuation, or opinion should consider whether the inclusion or summary of that report, valuation, or opinion is required in the registration statement to comply with specific disclosure requirements, such as Item 1015 of Regulation M-A, Item 601(b) of Regulation S-K, or the general disclosure requirement of Rule 408, "Additional Information," of the 1933 Act.

Guidance contained in this footnote is based on guidance provided in question 233.02 of the SEC's *Compliance and Disclosure Interpretations: Securities Act Rules*, which is available at www.sec.gov/divisions/corpfin/guidance/securitiesactrules-interps.htm.

⁴ Additional disclosures in management's discussion and analysis (MD&A) or changes in the format by which information is communicated may be required. Management should consider the guidance in Section 500 of the SEC's *Codification of Financial Reporting Policies*, including, but not limited to, Section 501.14 "Critical Accounting Estimates," in considering both the information presented in MD&A and the format in which that information is presented.

Background

14.16 The enterprise has a December 31 year-end and filed its initial registration statement on August 24, 2X11. In this example, the enterprise has granted stock options on a quarterly basis over the preceding period. To the extent that an enterprise grants other equity instruments (for example, nonvested shares), the subsequent example may be equally relevant.

14.17

Illustrative Incremental Financial Statement Note Disclosure

During the 12-month period ended June 30, 2X11, the company granted stock options with weighted average exercise prices, weighted average fair values of underlying shares, weighted average intrinsic values per option, and weighted average fair values per option, as follows:

<i>Grants Made During Quarter Ended</i>	<i>Number of Options Granted (000s)</i>	<i>Weighted Average Exercise Price</i>	<i>Weighted Average Fair Value of Underlying Share</i>	<i>Weighted Average Intrinsic Value per Option</i>	<i>Weighted Average Fair Value per Option</i>
September 30, 2X10		\$—	\$—	\$—	\$—
December 31, 2X10		\$—	\$—	\$—	\$—
March 31, 2X11		\$—	\$—	\$—	\$—
June 30, 2X11		\$—	\$—	\$—	\$—

The fair value of the underlying shares was determined contemporaneously with the grants.

14.18

Illustrative MD&A Disclosure

Stock-Based Compensation

We account for stock options issued to employees using a fair value-based method under which we measure the cost of employee services received in exchange for an award of equity instruments, including stock options, based on the grant-date fair value of the award. The resulting cost is recognized for the awards expected to vest over the period during which an employee is required to provide service in exchange for the award, usually the vesting period.

We account for stock options issued to nonemployees on a fair value-based method as well; however, the fair value of the options granted to nonemployees is remeasured each reporting period until the service is complete, and the resulting increase or decrease in value, if any, is recognized as income during the period the related services are rendered.

The fair value of the stock options issued to employees and nonemployees was estimated at each grant date using the Black-Scholes option pricing model. One of the inputs to this model is the estimate of the fair value of the underlying common stock on the date of grant. The other inputs include an estimate of the expected volatility of the stock price, an option's expected term, the risk-free

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interest rate over the option's expected term, the option's exercise price, and our expectations regarding dividends.

We do not have a history of market prices for our common stock because our stock is not publicly traded. We utilized the observable data for a group of peer companies that grant options with substantially similar terms to assist in developing our volatility assumption. The expected volatility of our stock was determined using weighted average measures of the implied volatility and the historical volatility for our peer group of companies for a period equal to the expected life of the option. We have derived our expected term assumption based on the simplified method, which results in an expected term based on the midpoint between the vesting date and contractual term of an option. The simplified method was chosen because we have limited historical option exercise experience due to our company being privately held. The expected term for options issued to nonemployees was determined based on the contractual term of the awards. The weighted-average risk-free interest rate was based on a zero coupon U.S. Treasury instrument whose term was consistent with the expected life of the stock options. We have not paid and do not anticipate paying cash dividends on our shares of common stock; therefore, the expected dividend yield was assumed to be zero.

The value of options issued to nonemployees was insignificant.⁵ A summary of the significant assumptions used to estimate the fair value of employee equity awards during the six months ended June 30, 2X11, and the years ended December 31, 2X10, and 2X09 were as follows:

	<i>Year Ended December 31, 2X09</i>	<i>Year Ended December 31, 2X10</i>	<i>Six Months Ended June 30, 2X11</i>
Expected term			
Risk-free interest rate			
Volatility			
Dividend yield			

If factors change, and we employ different assumptions, stock-based compensation cost on future awards may differ significantly from what we have recorded in the past. Higher volatility and longer expected terms result in an increase to stock-based compensation determined at the date of grant. Future stock-based compensation cost and unrecognized stock-based compensation will increase to the extent that we grant additional equity awards to employees, or we assume unvested equity awards in connection with acquisitions. If there are any modifications or cancellations of the underlying unvested securities, we may be required to accelerate any remaining unearned stock-based compensation cost or incur incremental cost. Stock-based compensation cost affects our cost of revenue; research and development expense; and selling, general, and administrative expenses.

⁵ If such awards to nonemployees are significant, an entity should consider separate disclosure of information related to such awards in a manner that is consistent with that presented in this guide for equity awards to employees.

Assuming a fair value of our common stock of \$— and \$— at December 31, 2X10, and June 30, 2X11, respectively, the aggregate intrinsic value of the vested and unvested options to purchase shares of our common stock outstanding as of December 31, 2X10, and June 30, 2X11, was \$— million and \$— million, respectively.

We estimate our forfeiture rate based on an analysis of our actual forfeitures and will continue to evaluate the appropriateness of the forfeiture rate based on actual forfeiture experience, analysis of employee turnover behavior, and other factors. Changes in the estimated forfeiture rate can have a significant effect on reported stock-based compensation expense because the cumulative effect of adjusting the rate for all expense amortization is recognized in the period the forfeiture estimate is changed. The effect of forfeiture adjustments during 2X09, 2X10, and the 6 months ended June 30, 2X11, was insignificant.

Significant Factors, Assumptions, and Methodologies Used in Estimating Fair Value of Common Stock

We performed valuations to estimate the fair value of our common stock for each option grant during the 12-month period ended June 30, 2X11. The per-share exercise prices, fair values of underlying shares, and fair values of the option awards as of the respective dates of valuation are as follows:

<i>Date of the Valuation</i>	<i>Number of Options Granted (000s)</i>	<i>Exercise Price per Share of Common Stock</i>	<i>Fair Value of Underlying Share of Common Stock</i>	<i>Fair Value per Option Award</i>
September 20, 2X10		\$—	\$—	\$—
December 20, 2X10		\$—	\$—	\$—
March 20, 2X11		\$—	\$—	\$—
June 20, 2X11		\$—	\$—	\$—

Our valuations consider a number of objective and subjective factors that we believe market participants would consider, including (a) our business, financial condition, and results of operations, including related industry trends affecting our operations; (b) our forecasted operating performance and projected future cash flows; (c) the liquid or illiquid nature of our common stock; (d) liquidation preferences, redemption rights, and other rights and privileges of our common stock; (e) market multiples of our most comparable public peers; (f) recent sales of our securities; and (g) market conditions affecting our industry.

We used the market comparable approach and income approach to estimate our enterprise value. The market comparable approach estimates the value of a company by applying market multiples of publicly traded companies in the same or similar lines of business to the results and projected results of the company being valued. The income approach involves applying an appropriate risk-adjusted discount rate to projected cash flows based on forecasted revenue and costs. In applying the market comparable and income approaches

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to determine a value of the common stock, a discount was applied to reach the final valuation of the common stock based on the fact that, inasmuch as we are a private company, there are impediments to liquidity, including lack of publicly available information and the lack of a trading market. The size of the discount was determined using quantitative analysis and was, in part, a function of market participant assumptions as to the estimated time for us to reach a liquidity event.

When estimating the enterprise value at each valuation date and the corresponding value of the common stock, we determined an appropriate weighting between the valuations derived from the market comparable and income approaches based on the various scenarios presented in the following paragraphs.

We prepared, as of each valuation date, financial forecasts used in the computation of the enterprise value for both the market comparable and income approaches. The financial forecasts were based on assumed revenue growth rates and operating margin levels that took into account our past experience and future expectations. The risks associated with achieving these forecasts were assessed in selecting the appropriate cost of capital rates, which decreased over time from $_%$ to $_%$.

The values derived under the market comparable and income approaches were then used to determine an initial estimated enterprise value. The initial estimated value was then subjected to the probability-weighted expected return method, which produced the per-share value utilizing a probability-weighted scenario analysis. The following scenarios were assumed:

- *Initial public offering.* Estimates the value based on an estimated initial public offering (IPO) value discounted to the present value based on both risk and timing. As noted in our discussion that follows, the probability of this scenario has increased as we approach the estimated IPO date.
- *Sale.* Estimates the value assuming the sale of the entire enterprise based on estimates of future value in a potential sale transaction discounted to the present value.
- *Private company.* Uses both the market comparable and income approaches to estimate the equity value as of the valuation date and then allocates that value using the option pricing model, assuming that the company remains private for longer than in either of the previous scenarios.
- *Liquidation.* Assumes we are dissolved, in which case the book value less the applicable liquidation preferences represents the amount available to the common stockholders. Given our stage of development and financial performance, our valuations applied a zero probability to this scenario.

Over time, as we achieved certain milestones, the probabilities, likely exit values in the IPO and sale scenarios, and current value in the private company scenario were adjusted accordingly, with the probability of a successful exit, such as an IPO or a sale, increasing over time. In the valuations used to establish the fair value of our common stock, the discount for lack of marketability generally decreased over time because it was estimated to be $_%$ in September 2X10, and then decreased to $_%$, $_%$, and $_%$ for December 2X10, March 2X11, and June 2X11, respectively.

There is inherent uncertainty in our forecasts and projections, and if we had made different assumptions and estimates than those described previously, the amount of our stock-based compensation expense, net loss, and net loss per share amounts could have been materially different.

Over the past 12 months, we have consistently been able to add new customers and continually improve efficiencies in operations such that our revenues have grown, as have our overall profits. This growth was experienced across the entire company because it included both product and service revenues and profits. This information caused changes in the company's forecasted operations, thereby driving an increase in the estimated fair value of our common stock for purposes of valuing equity awards over that same time period. The following is a discussion of all options we have granted within the time periods highlighted previously and significant factors contributing to the difference between fair values as of the date of each grant and estimated IPO price:

- *September 20, 2X10.* Options granted on this date had an exercise price of \$__ per share, which equals the fair value of our common stock as determined by our valuation as of September 20, 2X10. The valuation used a risk-adjusted discount of __%, a nonmarketability discount of __%, and an estimated time to a liquidity event of 9–15 months. The expected outcomes, considered as a range, were weighted more toward an IPO (75%), with lower weights for a sale (15%) and for remaining as a private company (10%) and with no weight given to a liquidation scenario.
- *December 20, 2X10.* The options granted on this date had an exercise price of \$__ per share based on our valuation of our common stock as of December 20, 2X10. The valuation used a risk-adjusted discount of __%, a nonmarketability discount of __%, and an estimated time to a liquidity event of 9–15 months. The expected outcomes, considered as a range, were weighted more toward an IPO (70%), with lower weights for a sale (10%) and for remaining as a private company (20%) and with no weight given to a liquidation scenario. During this quarter, due to a design flaw, we failed to release our anticipated new product, Alpha, that was scheduled to be released in November. As a result, revenue declined by __% from the prior quarter, and we incurred a quarterly net loss. Subsequent to our failure to release Alpha, we considered terminating the Alpha operations and reducing our workforce. This failure has caused us to increase our estimated time to a liquidity event.
- *March 20, 2X11.* The options granted on this date had an exercise price of \$__ per share based on our valuation of our common stock as of March 20, 2X11. The valuation used a risk-adjusted discount of __%, a nonmarketability discount of __%, and an estimated time to a liquidity event of 6–9 months. The expected outcomes, considered as a range, were weighted more toward an IPO (80%), with lower weights for a sale (10%) and for remaining as a private company (10%) and with no weight given to a liquidation scenario. During this quarter, our engineers corrected the aforementioned Alpha design flaw, and we released Alpha and exceeded the projected quarterly sales of Alpha by __%. Largely as a result of Alpha, overall revenue exceeded forecasts, and in this quarter, we recorded net income for the first time in our history. We hired 20 additional sales team members, bringing total

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employee count to 400. We also opened a sales office in Shanghai, China. The improvements in operations resulted in an increase in the estimated value in the March 2X11 valuation we performed.

- *June 20, 2X11.* The options granted on this date had an exercise price of \$__ per share based on our valuation of our common stock as of June 20, 2X11. The valuation used a risk-adjusted discount of __%, a nonmarketability discount of __%, and an estimated time to a liquidity event of 3–6 months. The expected outcomes, considered as a range, were weighted more toward an IPO (95%), with lower weights for a sale (5%) and with no weight given to a private company or liquidation scenario. During this quarter, revenue and net income exceeded forecasts by __% and __%, respectively. We also entered into a new alliance with XYZ Company, pursuant to which we will embed the Alpha product in certain of its products. Published reports indicate that our products reach more than 100 million users annually. During the quarter, the number of our employees increased from 400 to 500.

We believe that it is reasonable to expect that the completion of an IPO will add value to the shares of our common stock because they will have increased liquidity and marketability. We believe that the preceding estimates are a reasonable description of the value that market participants would place on the common stock as of each valuation date.

We recorded stock-based compensation of \$__, \$__, and __ during 2X09, 2X10, and the 6-month period ended June 30, 2X11. Included in these amounts was employee stock-based compensation of \$__, \$__, and \$__, respectively. In future periods, we expect stock-based compensation to increase, due in part to our existing unrecognized stock-based compensation and as we issue additional stock-based awards to continue to attract and retain employees. As of December 31, 2X10, and June 30, 2X11, we had \$__ and \$__ of unrecognized stock-based compensation costs related to equity instruments previously granted, which is expected to be recognized over an average period of __ years for both periods.

Appendix A

The Initial Public Offering Process¹

A.01 A private enterprise might undertake an initial public offering (IPO) of securities for numerous reasons, including the following:

- a. *Immediate liquidity for existing investors in debt and equity securities.* In an IPO, an enterprise may sell newly issued securities (a primary offering), existing securities holders may sell securities (a secondary offering), or both may occur. A secondary offering may provide immediate liquidity for existing securities holders. However, only the shares covered (that is, listed on the front cover of the IPO prospectus) by the Securities Act of 1933 (the 1933 Act) registration statement are publicly tradable free and clear of all restrictions. The remaining securities remain unregistered and subject to restrictions on public resale.
- b. *Subsequent liquidity for existing investors in debt and equity securities.* Coincident with its IPO, an enterprise usually applies to list its securities on a national exchange or market, which provides an active, liquid aftermarket for the enterprise's securities. Rule 144, "Selling Restricted and Control Securities," of the 1933 Act provides a safe harbor for sales of unregistered and control stock by affiliates (that is, officers, directors, or 10 percent shareholders) and nonaffiliates of the registrant. Under Rule 144, following an IPO, any investor may resell unregistered securities after a six-month holding period from the date of purchase, subject to volume limitations applicable to sales by affiliates of the issuer. Absent a public registration, unregistered securities may be sold after a one-year holding period, subject again to volume limitations and public information requirements for sales by affiliates. Thus, even though an enterprise typically does not register all of its securities in an IPO, existing investors obtain the prospect of liquidity in the public aftermarket after satisfying any legal or contractual holding period restrictions.
- c. *Maximizing the value of an enterprise's securities.* Public securities markets tend to maximize the exchange value of an enterprise's securities by
 - i. maximizing the number of potential buyers (that is, providing liquidity),
 - ii. minimizing the asymmetry of information among potential buyers (that is, providing timely, complete, and accurate disclosures about the enterprise, as well as about alternative investments),
 - iii. minimizing transaction costs for buyers and sellers, and

¹ This appendix contains references to various Securities and Exchange Commission (SEC) forms that could be used in specific circumstances. Please note that, in some cases, in addition to the forms listed here, there may be other forms that could be used for a specific purpose. Furthermore, although references to forms in this appendix are accurate as of the writing of this guide, they are subject to change. Therefore, before deciding on which form to use, readers should refer to the SEC website at www.sec.gov for the latest information.

- iv. maximizing the subsequent marketability of purchased securities (that is, eliminating holding periods and providing future liquidity).
- d. *Access to financing in public capital markets.* Once an enterprise completes its IPO, it can access the public capital markets. In a subsequent registration, an enterprise may raise capital through a primary offering of its equity or debt securities. Larger, seasoned enterprises may be eligible to obtain even more timely access to the public capital markets by filing a "shelf" registration statement (Form S-3). Given that public markets tend to provide the most efficient source of capital at the lowest cost, an enterprise can reduce its cost of capital and, consequently, increase its market value by going public.
- e. *Equity "currency."* In addition to the ability to sell securities for cash, a public enterprise obtains the ability to register shares for other uses, such as the acquisitions of businesses (Form S-4) or compensation to employees, officers, and directors (Form S-8). Such equity currency may provide an efficient means for financing growth through acquisitions. Also, such equity currency may be an attractive form of compensation (for example, stock options and performance plans, stock purchase plans) in view of the liquidity of the shares issued. Equity compensation arrangements allow an enterprise to conserve cash, and they may offer tax advantages to the enterprise and increase employee loyalty and motivation.
- f. *Enhanced status.* Successfully completing an IPO enhances the status and credibility of an enterprise. For many start-up enterprises, the IPO is perceived to validate the prospects of the enterprise in the eyes of customers, suppliers, employees, and investors. In addition, the IPO may serve as a branding event, which increases the public and market awareness of the enterprise and its products and services.
- g. *Capital financing.* The primary offering of securities in an IPO provides capital to fund growth (for example, investments in plant and infrastructure, research and development, sales and marketing, business acquisitions, and geographic expansion).
- h. *Avoiding economic penalties.* In some cases, a private enterprise may have obtained financing that contemplates a public exchange offer for registered securities or that contains penalties (for example, higher interest rates or dividend and liquidation preferences) if the enterprise does not file or complete an IPO by a specified date.

A.02 The process to complete an IPO may be lengthy. Preparation for an IPO begins well before the filing of a registration statement with the Securities and Exchange Commission (SEC). Key considerations in preparing for an IPO include the following:

- a. *Corporate governance.* Enterprises evaluate the structure and composition of their board of directors to ensure that they are appropriate for a public enterprise. For example, enterprises will need independent outside directors who can provide specialized expertise, independent perspectives, and enhanced credibility with the investment community. Enterprises also prepare by forming special

committees of the board, particularly an audit committee, which is responsible for oversight over the financial reporting process, internal audit, and the independent auditors. Enterprises that plan to list their securities on a national exchange also prepare to comply with the respective listing requirements.

- b. Controls, compliance processes, and records.* Enterprises consider the adequacy of their compliance procedures, books and records, and internal accounting controls in light of all applicable laws and regulations. In addition to verifying full compliance with laws and regulations applicable to the company's existing business, including the provisions of the Foreign Corrupt Practices Act of 1977, companies would need to assess their ability to comply with any incremental requirements associated with becoming a publicly traded company, including the provisions of Section 13(b) of the Securities Exchange Act of 1934 (the 1934 Act). In addition, enterprises consider whether they have adequate disclosure controls and procedures that will allow the timely preparation of reports required by the SEC under the 1934 Act, and they prepare for management certification of their periodic reports following an IPO. Also, enterprises prepare for the annual evaluation of the effectiveness of their internal controls over financial reporting and, if applicable, the related examination and attestation by their registered public accounting firm, which is required in annual reports following the IPO. Enterprises consider the adequacy of their accounting systems and personnel for meeting SEC periodic reporting deadlines, which, for larger enterprises, could accelerate after their first year as a public enterprise. The Equity Securities Task Force recommends that companies consult with their legal counsel and independent auditors well in advance of their plans to go public to assess their IPO readiness based upon these and other factors and to ensure that their independent auditors satisfy the independence requirements established by the SEC, which may be different from those applicable to private companies under AICPA standards.
- c. Executive management.* Enterprises consider the character, skills, experience, and overall composition of their executive management team. Enterprises contemplating an IPO often look to hire a CEO and CFO who have prior experience at public enterprises or with the IPO process. In addition, enterprises consider the composition and strength of other key members of the management team (for example, heads of operations, production, sales, marketing, accounting, human resources, information systems, internal audit, treasury, and legal). Enterprises consider their code of ethics applicable to executive and financial officers, which must be publicly disclosed following the IPO. Under federal securities laws, officers of public enterprises have significant duties and obligations and could face significant penalties and sanctions for violations.
- d. Employee compensation.* Enterprises develop an employee compensation strategy and implement an effective compensation system. Employee compensation programs are critical in competing for talent, retaining employees, and using incentives to align employee performance with business strategies. Developing an employee compensation strategy is complex and considers, among

other things, philosophy; organizational culture and dynamics; competitive factors; potential dilution (from using stock or options as compensation); and legal, tax, and accounting implications.

A.03 One of the key steps in the IPO process is the selection of the lead, or managing, underwriter. An IPO usually is executed as an underwritten offering whereby an underwriting syndicate assembled by the lead underwriter distributes the shares to investors using its established contacts and distribution channels. The selection of a recognized underwriter lends additional credibility to the offering and enterprise. Considerations for selecting a lead underwriter include, among other things, geographic scope, industry specialization, minimum underwriting criteria, reputation, experience, syndication capability, aftermarket support, and service offerings. Underwriters typically play a significant role in maintaining a strong and stable aftermarket for the enterprise's securities. They serve as market makers, buy and sell shares on the interdealer market, and help maintain interest among analysts and investors. The lead underwriter has primary responsibility for recommending the initial price of the shares to be sold. Because underwriters are compensated only if the offering is completed (except for any expenses the enterprise agrees to reimburse), they tend not to agree to underwrite unless they are reasonably confident that the offering will be completed. The final underwriting agreement usually is not signed until just before the registration statement is declared effective by the SEC. Ordinarily, there is no legal obligation for either the enterprise or underwriters to proceed with the IPO until that time. However, underwriters prepare a letter of intent that describes the preliminary understanding of the arrangement (for example, underwriters' commission, estimated offering price, over-allotment option, underwriter warrants, and right of first refusal on future offerings), but that does not create a legal obligation for either the enterprise or underwriters to proceed with the offering. As a condition of the underwriting agreement, certain existing shareholders are often required to execute a lock-up agreement, which restricts their ability to sell shares for a period of time—usually up to 180 days following the IPO, subject to extension of up to an additional 18 days under limited circumstances.

A.04 The two common types of underwriting agreements are firm commitment and best efforts. In a firm-commitment underwriting agreement, the underwriters agree to purchase all the shares in the offering and then resell them to the public. Any shares not sold to the public are paid for and held by the underwriters for their own account. In a best-efforts underwriting agreement, the underwriters simply agree to use their best efforts to sell the shares on behalf of the enterprise. Some best-efforts agreements are all-or-nothing arrangements—the offering is withdrawn if the shares cannot all be sold. Others set a lower minimum number of shares that must be sold before the offering can be completed. Underwriters generally will not (and cannot) guarantee an offering price (or, in the case of debt securities, an interest rate) and total proceeds in advance. The offering price is not finalized until just before the registration statement becomes effective because that price must be responsive to current market conditions at that time. Underwriters may estimate a range for the offering price based on market conditions existing at the time of their estimate; however, that estimate is not binding. The actual offering price is affected by market conditions as of the effective date of the offering, the completion of the underwriters' due diligence, the success of the road show (see paragraph A.08), and investor demand for the securities offered. The net proceeds to the enterprise also will be reduced by the underwriters' commission

(generally around 7 percent) and any agreed-upon reimbursement of underwriters' expenses (for example, legal fees incurred by the underwriters' counsel to review compliance with state securities laws—commonly referred to as "Blue Sky Laws"). In addition, the enterprise is likely to incur additional direct and incremental costs in an IPO.

A.05 A second key step in the IPO process is the preparation of the registration statement, which must be filed with the SEC. Preparation and review of the registration statement is a joint effort involving enterprise executives, enterprise attorneys, auditors, underwriters, and underwriters' attorneys. The registration statement contains the prospectus, which is both a selling document and disclosure document. The prospectus must comply with SEC rules and regulations regarding its form and content, and it must not materially misstate any information or omit any material information. Controlling shareholders, executives, directors, underwriters, and experts providing information for the registration statement are subject to liability under Section 11 of the 1933 Act for false or misleading statements or omissions. Preparation of the registration statement may take two months or more, particularly if an audit is required of previously unaudited financial statements of either the enterprise or recent significant acquired businesses or if the enterprise needs to obtain resolution of any questions from the SEC staff on a prefiling basis.

A.06 Once a registration statement is filed, a successful IPO still is not assured, and the registration process typically takes an additional three to six months. In fact, a significant percentage of IPO filings are withdrawn without becoming effective. A number of factors could contribute to the decision to withdraw an IPO filing. Some of these factors involve the IPO process itself (for example, the inability to comply with SEC disclosure requirements or resolve SEC staff comments, a poor road show, or resignation of the enterprise's underwriters or auditors). In other cases, an IPO filing might be withdrawn due to market conditions (for example, reduced market liquidity or demand for IPOs, changes in interest rates and costs of capital, or changes in market sector valuations). An IPO also might be withdrawn due to adverse business developments (for example, loss of a customer or prospective customer, inability to meet product development milestones, increased competition, loss of key personnel, or inability to obtain financing) or an unexpected change in the outlook or profile of the industry, including as a result of changes in technology, regulatory developments, or material developments among the enterprise's competitors. In other cases, an IPO might be withdrawn because a financial or strategic buyer acquires the enterprise.

A.07 Once filed, an IPO registration statement is reviewed by staff accountants and lawyers in the SEC's Division of Corporation Finance. The purpose of the SEC's review is not to evaluate the quality of an offering but, rather, to assess the compliance of the registration statement with the SEC's rules and regulations, including the clarity of the disclosures, fair presentation, and compliance of any financial statements with accounting principles generally accepted in the United States of America. When the SEC staff completes its review of the initial filing (usually within 30 days), it will issue the enterprise a comment letter identifying any deficiencies noted or requesting supplemental information. Responding to and resolving SEC staff comments may require several letters and amendments to the registration statement.

A.08 Following substantial resolution of the SEC staff's comments, a preliminary prospectus (the red herring), which includes the then estimated range

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of offering prices, is printed so that the underwriters can begin their selling efforts, and the enterprise can begin its road show. During the road show, executives of the enterprise travel to meetings with members of the underwriting syndicate and prospective investors. The road show gives participants the opportunity to ask questions and evaluate the strength of the management team and the enterprise's strategy and prospects. The road show may take from one to two weeks, and during this period, the underwriters build and monitor the book, which is the list of tentative orders to purchase securities once the offering is priced.

A.09 Following the road show and shortly before the underwriting agreement is signed and the registration statement is declared effective, the underwriters meet with the enterprise to agree upon the offering price. The price depends on many factors, among them the success of the road show and the demand reflected in the book in light of the planned size of the offering. In some cases, the size of the offering may be increased or decreased to address demand and market conditions. In addition, the price is set considering, among other things, current market conditions (for example, economic growth rates and interest rates), current market valuation multiples within the enterprise's industry, current levels of competition, the nature and timing of other recent or pending offerings in the market, projections of enterprise revenue growth and profitability, the pro forma effects of the proposed use of the funds from the IPO, and the potential dilution from contingent and convertible securities. In short, pricing IPO stock is subjective and does not rely solely upon quantitative valuation techniques typically used by valuation specialists in rendering reports on their estimate of fair value. Underwriters typically advise an enterprise to set a price that will produce an active aftermarket in the shares and a modest price rise (for example, 10 percent to 15 percent) in secondary market trading following the offering.

A.10 Once all SEC staff comments have been resolved, and the registration statement has been updated to reflect all current and material information, the enterprise files its pricing amendment, which discloses the offering price, the underwriters' commission, and the net proceeds to the enterprise. The formal underwriting agreement is executed at this time. Following a request to accelerate effectiveness, the SEC staff declares the registration statement effective, and the final prospectus is printed and distributed.

A.11 Until the closing of the offering, the enterprise or its underwriters still may decide to withdraw the offering for any reason (see paragraph A.06), including material adverse events, although this is uncommon. The closing for firm-commitment underwritings generally occurs on the third trading day after the registration statement becomes effective. The closing for best-efforts underwritings generally occurs 60–120 days after the effective date, provided the underwriters have sold at least the minimum number of shares specified in the underwriting agreement. At the closing, the enterprise issues the securities to the underwriters and receives the proceeds (net of the underwriters' commission) from the offering.

A.12 Immediately after the IPO takes place, the enterprise's registered shares begin trading on the selected market or exchange. The market price of a new issue may be extremely volatile in the initial trading period. Unless an investor's shares are registered in the IPO, those shares may be resold in the public market only after satisfying the holding period and volume limitations of Rule 144 of the 1933 Act. The ability of an investor to resell securities

also may be subject to contractual restrictions agreed upon with the enterprise at the time of investment, with other investors (for example, a voting trust arrangement), or as a condition of the underwriting agreement (typically a lock-up agreement, as discussed in paragraph A.03). Thus, even if the enterprise successfully completes an IPO, its private investors are not necessarily assured of realizing the IPO offering price. That is, investors in privately held enterprises cannot always expect to obtain immediate liquidity upon the IPO and may be required to bear market risk following the IPO until they can sell shares, whether privately (and, thus, subject to marketability discounts) or in the public market (after satisfying legal and any contractual holding periods).

Appendix B

Venture Capital Rates of Return

B.01 Because private enterprises often seek financing from private equity investors, including venture capital firms, the venture capital arena provides an observable market for the cost of capital for privately held enterprises. The following table illustrates the average rates of return¹ for various types of venture capital funds, as published by Venture Economics for the period ended December 31, 2002, and by Thomson Reuters for the period ended December 31, 2008. This data is provided as an example of the range of returns that venture capital funds have experienced over various time frames. The years 2002 and 2008 have been selected because they represent two different stages in market cycle. Readers are encouraged to supplement this information with the latest available data. Among other things, this table is intended to demonstrate that rates of return vary significantly over a short period of time.

Type of Fund	5-Year Return		10-Year Return		20-Year Return	
	2002	2008	2002	2008	2002	2008
Seed/Early Stage ¹	51.4%	3.0%	34.9%	25.5%	20.4%	22.1%
Balanced ²	20.9%	7.5%	20.9%	12.0%	14.3%	14.6%
Later Stage ³	10.6%	8.1%	21.6%	7.3%	15.3%	14.7%
All Ventures	28.3%	5.7%	26.3%	13.4%	16.6%	17.2%

¹ Venture Economics uses the term *seed stage* to refer to enterprises that have not yet fully established commercial operations and may involve continued research and development. Venture Economics uses the term *early stage* to refer to enterprises involved in product development and initial marketing, manufacturing, and sales activities.

² Venture Economics uses the term *balanced* to refer to enterprises at a variety of stages of development (seed stage, early stage, later stage).

³ Venture Economics uses the term *later stage* to refer to enterprises that are producing, shipping, and increasing sales volume.

These average rates of return illustrate the overall average returns to investors in venture capital funds, considering the target returns that venture capital investors demand from the individual portfolio companies (as shown in paragraph B.02), as well as the success and failure rates for companies at various stages of development. The actual returns on the funds' portfolios of investments in private enterprises are typically higher because the returns to venture capital fund limited partner investors, as illustrated in the preceding table, are net of fees and *carried interest*, defined by Venture Economics as the percentage of profits that venture capital fund general partners receive out of the profits of the investments made by the fund. Note, however, that this data may exhibit some survivorship bias at the portfolio level because funds that did not survive to report results are not included in the data.

¹ The average annual return is based upon Venture Economics' Private Equity Performance Index (PEPI). The PEPI is calculated quarterly from Venture Economics' Private Equity Performance Database, which tracks the performance of 1,400 U.S. venture capital and buyout funds formed since 1969.

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By comparison, the average rates of return of investments in public equity securities for similar periods ended December 31, 2002, and December 31, 2008, are shown in the following table:²

<i>Equity Market Index</i>	<i>5-Year Return</i>		<i>10-Year Return</i>		<i>20-Year Return</i>	
	<i>2002</i>	<i>2008</i>	<i>2002</i>	<i>2008</i>	<i>2002</i>	<i>2008</i>
Dow Jones 30 Industrials	2.0%	(5.9%)	10.8%	(2.5%)	11.4%	6.2%
Standard & Poor's (S&P) 500	0.0%	(6.6%)	9.1%	(4.6%)	10.4%	5.1%
Russell 2000 ¹	(1.5%)	2.4%	6.8%	4.9%	—	9.8%
Wilshire 5000	0.9%	1.0%	10.4%	0.1%	13.3%	10.3%

¹ The Russell 2000 Index was developed more recently than the other indexes shown, and a 20-year return was not available as of December 31, 2002. The return for the 15 years ended December 31, 2002, was 6.9 percent.

As expected, the returns of venture funds exceed the performance of public equity investments, consistent with the higher risk and higher cost of capital associated with private enterprises.

B.02 Although venture capital portfolio returns illustrate the higher cost of capital for privately held enterprises, those returns may understate the actual cost of capital for an individual privately held enterprise. The following publications provide guidance about the rates of return expected by venture capital investors at various stages of an entity's development through successful exits. A summary is set forth in the following table:³

Rates of Return

<i>Stage of Development</i>	<i>Plummer¹</i>	<i>Scherlis and Sahlman²</i>	<i>Sahlman and Others³</i>
Start-up ⁴	50%–70%	50%–70%	50%–100%
First stage or early development ⁵	40%–60%	40%–60%	40%–60%
Second stage or expansion ⁶	35%–50%	30%–50%	30%–40%
Bridge/initial public offering (IPO) ⁷	25%–35%	20%–35%	20%–30%

¹ James L. Plummer, *QED Report on Venture Capital Financial Analysis* (Palo Alto: QED Research, Inc., 1987).

² Daniel R. Scherlis and William A. Sahlman, "A Method for Valuing High-Risk, Long Term, Investments: The 'Venture Capital Method,'" Harvard Business School Teaching Note 9-288-006 (Boston: Harvard Business School Publishing, 1989).

² Thomson Datastream for the periods ended December 31, 2002 (June 2003); Thomson Reuters, Wilshire Associates, Russell Investments, and SNL Financial for the periods ended December 31, 2008.

³ The stages in the table are based on the study that was performed and do not match the stages defined in chapter 2, "Stages of Enterprise Development." See footnote 1 in paragraph 2.03.

- ³ William A. Sahlman and others, *Financing Entrepreneurial Ventures*, Business Fundamentals (Boston: Harvard Business School Publishing, 1998).
- ⁴ As described in the publications referenced in this table, start-up-stage investments typically are made in enterprises that are less than one year old. The venture funding is to be used substantially for product development, prototype testing, and test marketing.
- ⁵ As described in the publications referenced in this table, early development-stage investments are made in enterprises that have developed prototypes that appear viable and for which further technical risk is deemed minimal, although commercial risk may be significant.
- ⁶ As described in the publications referenced in this table, enterprises in the expansion stage usually have shipped some product to consumers (including beta versions).
- ⁷ As described in the publications referenced in this table, bridge/IPO-stage financing covers such activities as pilot plant construction, production design, and production testing, as well as bridge financing in anticipation of a later IPO.

The rate of return expected by venture capitalists for individual investments is related to the venture capitalists' assessment of the related risk. In some cases, actual returns may significantly exceed the expected rate, whereas in other cases, the initial investment may be entirely lost. Consequently, actual venture capital investment returns (even after consideration of the effects of fees and carried interest [see paragraph B.01]) fall short of these expected rates of return. Further, actual venture capital investment returns tend to vary significantly over time, reflecting macroeconomic trends and the relative levels of activity in the initial public offering market. (Although the studies identified in this paragraph were published in 1987 and 1989, the Equity Securities Task Force confirmed through discussions with representatives of the venture capital industry that the rates of return expected for venture capital investments in recent years [relative to the date of publication of this guide] remain consistent with the ranges identified in those earlier studies.)

B.03 Given the probability of experiencing losses across the portfolio, most venture capital investors focus on target rates of return rather than actual rates of return. Unless a venture investor operates with a sufficiently high target rate of return, the overall rate of return on the portfolio will not be sufficiently high to compensate for the many situations in which substantially all of the investors' capital receives no return.⁴

⁴ For example, according to data obtained from Cambridge Associates, of the 1,606 biotech companies backed by U.S. venture capital firms between 1986 and 2008, 44 percent of the companies did not return the investors' capital. Although the average realized rate of return on these companies was approximately 25 percent, in order to compensate for the 44 percent loss rate, the investors would have needed to target a return in excess of 40 percent.

Appendix C

Criteria for the Selection of a Valuation Specialist

C.01 In selecting a valuation specialist, the Equity Securities Task Force (task force) recommends that management evaluate the qualifications of the specialist and also take into consideration the relationship of the valuation specialist to the enterprise. In assessing the specialist's qualifications, management may consider the following:

- a. Professional certification(s) or other recognition of the competence of the specialist in his or her field (for example, whether that specialist's work is subject to technical performance standards or other professional or industry requirements, ethical standards, and other membership requirements of a professional body or industry association; accreditation standards of a licensing body; or requirements imposed by law or regulation). The task force recommends that management consider the rigor of the credentialing body, including its testing levels, professional education requirements, and disciplinary procedures.
- b. The reputation and standing of the specialist in the views of peers and others familiar with the specialist's capability or performance, as indicated by publications, speeches, or other external validation (for example, endorsements of the specialist's work by parties unrelated to the specialist).
- c. The specialist's experience in valuing privately issued securities and, in particular, those of entities similar to the enterprise, including whether the specialist has valuation experience in the enterprise's industry or is otherwise knowledgeable about the industry. Management also may consider the specialist's knowledge and experience with respect to value allocation methods, such as those discussed in chapter 6, "Valuation of Equity Securities in Complex Capital Structures."
- d. Whether the specialist is familiar with the guidance in this guide.

C.02 The task force also recommends that in evaluating the qualifications of the specialist, management also evaluate the capability of the specialist to exercise competence in the circumstances applicable to the enterprise.

C.03 Although difficult to measure either qualitatively or quantitatively, ethical character is a key consideration for management in selecting among valuation specialists. A valuation specialist who has a reputation for being of high moral character and rendering unbiased, objective valuations, regardless of who the valuation specialist's client is or the client's interest in the outcome of the valuation, would be looked upon more favorably than a valuation specialist without such favorable attributes (for example, a valuation specialist with a reputation for tailoring the results of a valuation to fit the client's desired outcome).

C.04 An enterprise is not precluded from obtaining recommendations from its auditor for names of particular valuation specialists. An enterprise

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may, prior to engaging a particular valuation specialist, find it advisable to ensure that its auditor would accept that valuation specialist as an expert in his or her field. However, the decision regarding the choice of valuation specialist should be made by management alone.¹

¹ The AICPA's Code of Professional Conduct prohibits auditors from making decisions for an enterprise under audit. Enterprises that are Securities and Exchange Commission (SEC) registrants or that plan to undergo the registration process also should consider the effect of the SEC's independence rules.

Appendix D

Table of Responsibilities of Management and the External Valuation Specialist

D.01 A valuation specialist may be external or internal. When an external valuation specialist is used, the following table summarizes the respective responsibilities of management and the valuation specialist related to a valuation of privately issued securities in accordance with this guide. For some enterprises, the board of directors may assume or share with management one or more of the responsibilities listed for management. For purposes of this appendix, the term *management* may therefore also apply to the board of directors. The responsibilities of the independent auditor are not provided in this table because the decision regarding the choice of valuation specialist and the extent of his or her involvement should be made by management alone. The Equity Securities Task Force (task force) intends the information in the table to be descriptive rather than prescriptive.

Responsibilities of Management and the External Valuation Specialist

	<i>Management Responsibilities</i>	<i>Valuation Specialist's Responsibilities</i>
<i>Selecting the Valuation Specialist</i>	Select a qualified valuation specialist. See appendix C, "Criteria for the Selection of a Valuation Specialist."	Provide honest and complete disclosures about expertise, experience, credentials, references, and capability to meet the objective.
	Determine the valuation specialist's willingness to be referred to as an expert in filings with regulators.	Before accepting and completing a valuation engagement, discuss with management under what circumstances, if any, he or she would be willing to be referred to as an expert in filings with regulators.
	Determine the valuation specialist's willingness to support the valuation report in discussions with regulators and others.	Be prepared to support the valuation report in discussions with regulators and others.
<i>Performing a Valuation</i>	Define the objective for the involvement of the specialist.	Before commencing procedures on the valuation, ensure an appropriate understanding of the nature and scope of the work that is being asked of the specialist.

(continued)

Responsibilities of Management and the External Valuation Specialist—continued

	<i>Management Responsibilities</i>	<i>Valuation Specialist's Responsibilities</i>
	Provide comprehensive and accurate information to the valuation specialist about business conditions and about future business plans and associated conditions.	Evaluate the reasonableness of the assumptions and other information provided by management.
	Respond to inquiries of the valuation specialist.	Select appropriate valuation techniques. Use appropriate experts (for example, engineers) as necessary to assist in the valuation.
	Assume responsibility for the inputs and outputs of the valuation and the valuation techniques and assumptions used in the valuation.	Develop appropriate assumptions for use in conjunction with valuation techniques.
	Review the valuation report and discuss with the valuation specialist the basis for the conclusions reached in order to understand and evaluate them.	Complete the valuation on a timely basis, and document the work performed.

D.02 In connection with the preparation of a registration statement, an enterprise has no requirement to make reference to a valuation specialist simply because the registrant used or relied on a valuation report. However, an enterprise should consider the extent to which management uses or relies on the report of a valuation specialist and whether it would be appropriate to include that report, or a summary of that report, in the registration statement to support the enterprise's disclosures. If a registrant makes reference to a third-party expert, the entity should clearly disclose whether statements included or incorporated by reference in a registration statement are that of the third-party expert or the registrant. For example, if the entity discloses that the valuation assumptions were taken from, or prepared based on, the report of a third-party expert, then the registrant should provide the name and written consent of the valuation specialist under Rule 436, "Consents Required in Special Cases," of the Securities Act of 1933 (the 1933 Act). On the other hand, if the disclosure states that management or the board prepared the assumptions and, in doing so, considered or relied in part upon a report of a third-party expert, then there would be no requirement to provide the name and written consent of the valuation specialist under Rule 436 of the 1933 Act.¹

¹ Guidance in this paragraph is based on guidance provided in question 233.02 of the Securities and Exchange Commission's *Compliance and Disclosure Interpretations: Securities Act Rules*, which is available at www.sec.gov/divisions/corpfin/guidance/securitiesactrules-interps.htm.

D.03 Inclusion of the report or a summary of it would require the name and written consent of the valuation specialist to also be provided in the registration statement, thereby designating the specialist as an expert. See footnote 3 in paragraph 14.13. However, the task force observes that, in practice, valuation specialists are unlikely to provide a written consent and to be referred to as an expert in a registration statement.

Appendix E

Table of Capitalization Multiples

E.01 The following table presents the capitalization multiples for a perpetual annuity at various combinations of assumed discount rates and growth rates. The range of discount rates presented is for illustrative purposes only and is not intended to limit the range of discount rates that a valuation specialist might consider appropriate in the particular facts and circumstances of a valuation.

E.02 If cash flows are expected to be perpetual and equal in each period, value is determined by "capitalizing" the cash flows rather than discounting them. The present value of a perpetual annuity of \$1, assuming a discount rate of 10 percent, is calculated as follows:

$$\text{Present value} = \$1/(1.10) + \$1/(1.10)^2 + \$1/(1.10)^3 + \dots + \$1/(1.10)^n = \$10$$

(with n approaching infinity)

The same answer is obtained by a capitalization calculation that divides the constant perpetual cash flow by the discount rate, which is referred to here as a capitalization rate:

$$\text{Present value} = \$1 / 0.10 = \$10$$

E.03 If the cash flows are expected to grow at a constant rate, and the required rate of return for the stock remains constant, the capitalization rate is obtained by subtracting the growth rate from the discount rate. The present value of a perpetual annuity of \$1, assuming a 1 percent constant growth rate and a discount rate of 10 percent, is calculated as follows:

$$\text{Present value} = \$1 / (0.10 - 0.01) = \$11.11$$

More generally, the formula is as follows:

$$\text{Present value} = \$1 / (\text{long term discount rate} - \text{long term growth rate})$$

<i>Discount Rate</i>	<i>Growth Rate</i>			
	<i>0%</i>	<i>2%</i>	<i>5%</i>	<i>10%</i>
<i>2%</i>	50.00			
<i>5%</i>	20.00	33.33		
<i>10%</i>	10.00	12.50	20.00	
<i>20%</i>	5.00	5.56	6.67	10.00
<i>30%</i>	3.33	3.57	4.00	5.00
<i>40%</i>	2.50	2.63	2.86	3.33
<i>50%</i>	2.00	2.08	2.22	2.50
<i>60%</i>	1.67	1.72	1.82	2.00
<i>70%</i>	1.43	1.47	1.54	1.67

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E.04 Capitalization multiples are frequently used in calculating a terminal value for use in the income approach. However, because neither the growth rate nor the required rate of return for the stock are expected to remain constant, this model is not ideal for estimating the terminal value for early stage companies. In many cases, the cash flows provided for an enterprise cover only the next three to five years, which is too short a time frame to bring the enterprise into the mature growth stage. Furthermore, by the time the enterprise reaches the mature growth stage, the high entity-specific risk premium or venture capital rate of return used in calculating the discount rate would no longer apply. Therefore, the task force encourages valuation specialists to consider a variety of methods for estimating the terminal value and to select the most appropriate based on reasoned judgment.

Appendix F

Derivation of Weighted Average Cost of Capital

F.01 The formula used to calculate *weighted average cost of capital* (WACC), together with an explanation of the variables used, is as follows:

$$\text{WACC} = k_E \times (E/(E + D)) + k_D \times (1 - T_C) \times (D/(E + D)), \text{ where}$$

$$k_E = rf + \beta(\text{rm}) + P + A$$

Cost of equity capital (k_E). The cost of equity capital is the return required by shareholders.

Risk-free rate (rf). The risk-free rate is the return on government securities with a term similar to that of the investment being evaluated.

Market risk premium (MRP = rm). The MRP, also known as the equity risk premium, is the additional rate of return over the risk-free rate that is expected by investors from investments with systematic risk equal to the "market" portfolio. The "market" portfolio may be thought of as a broadly diversified investment portfolio, often thought of as the return on an index such as the Standard and Poor's 500.

Relevered beta (β). Relevered beta is a measure of the risk of an entity's stock relative to the risk of a diversified portfolio (the MRP). The theory and application of beta as a modifier of the MRP are well documented and widely accepted, and there are many available sources of beta. Because the estimation procedure is not controversial, those sources normally may be relied on.

Size premium (P). Research has shown that small enterprises have larger betas than large enterprises. An adjustment for size is included in the calculation of WACC because small stocks outperform large stocks, even after adjusting for the systematic risk (beta) of small stocks. This phenomenon is widely known as the size effect.

Alpha (A). Alpha is an entity-specific risk premium that is commonly used in situations when the specific risk associated with the subject entity is not sufficiently captured by MRP, beta, and size premium. Some of the risks that alpha adjusts for include considerations such as management depth and expertise, product line diversification, geographic diversification, or projection risk in excess of market participant assumptions.

Cost of debt (k_D). The cost of debt is the return required by lenders. The cost of debt is taken after tax because entities can deduct from their pretax profits the interest they pay on the money they borrow.

Income tax rate (T_C). The income tax rate for each entity is used to calculate the after-tax cost of debt.

Market value of equity and debt (E and D, respectively). The market value of equity and debt are used to weight the cost of equity and cost of debt in arriving at the overall WACC. Although the market value of common

equity is commonly used in the calculation, the carrying value of debt is often used as a proxy for the market value of debt.

F.02 WACC is frequently used in the discounted cash flow (DCF) method as an estimate of the rate of return or discount rate that market participants would require to acquire the cash flows for an enterprise, as discussed in paragraphs 4.26–.28.

F.03 When the purpose of a valuation is to estimate the fair value or fair market value of the enterprise as a whole, assuming a change of control for the enterprise on the valuation date, WACC used in the DCF method should reflect market participant assumptions regarding the leverage of the enterprise. That is, it can be assumed that a market participant acquiring the enterprise would put into place a capital structure that is more typical for the industry, irrespective of the actual capital structure in place at the time of the transaction.

F.04 Because the objective of this guide is to provide guidance on valuation of privately issued equity securities, the relevant cash flows are those expected by the holders of the securities, not the cash flows of the enterprise as a whole. Because minority shareholders do not have the ability to change the capital structure, WACC should thus be calculated based upon the actual capital structure of the enterprise, not a hypothetical market participant capital structure, through the expected liquidity event, if any. The cost of capital may change following a liquidity event.

F.05 Under certain assumptions, the Modigliani and Miller theorem¹ shows that WACC for an enterprise is independent of capital structure. That is, even though the cost of debt is lower than the cost of equity, higher leverage increases both the cost of debt and cost of equity such that the overall cost of capital remains unchanged. When these assumptions are relaxed to include the tax benefits of debt (which decrease the cost of capital for levered companies) and bankruptcy costs and agency costs related to suboptimal risk management (which increase the cost of capital for levered companies), WACC can be modeled as a wide U-shaped curve that remains relatively constant across a range of capital structures but increases at the extremes. Therefore, it is most important to consider company-specific WACC for companies with leverage that differs significantly from industry norms.²

¹ Franco Modigliani and Merton H. Miller, "The Cost of Capital, Corporation Finance and the Theory of Investment," *The American Economic Review* 48, no. 3 (1958): 261–97, www.jstor.org/stable/1809766.

Franco Modigliani and Merton H. Miller, "Corporate Income Taxes and the Cost of Capital: A Correction," *The American Economic Review* 53, no. 3 (1963): 433–43, www.jstor.org/stable/1809167.

² In particular, for highly levered companies in which the fair value of debt is significantly less than par, reflecting a high market rate of return for the debt, the valuation specialist should consider whether this high cost of debt and corresponding cost of equity is appropriately captured in the weighted average cost of capital used in the overall enterprise valuation before concluding on the fair value of equity.

Appendix G

*Real Options*¹

G.01 Real options (also called strategic options) methods rely on the use of option pricing methods (OPMs), such as Black-Scholes, to value strategic choices available to an enterprise or assets subject to strategic choices. The application of options models to enterprises is termed *real options* to indicate their application to corporate or nonfinancial (that is, real) assets as opposed to the models' more typical application to financial assets. The premise underlying real options is that enterprises are valued in the marketplace based on a combination of known business value plus a value that represents the opportunities for future value creation. Real options methods may be classified as a type of income approach because they are forward looking. They take into account the optionality at various future milestones, considering the possible successes to be achieved at those milestones and the multiple probabilistic outcomes then to be contemplated.

G.02 Real options methods have come to achieve acceptance as a superior choice for evaluating income streams subject to both uncertainty and choice. For example, in the discounted cash flow (DCF) method, when using very high discount rates (such as with some early-stage research project cash flows), the negative cash flows occur at the beginning of the estimation period (in which the present value interest factor is still relatively significant), and the positive cash flows occur at the end of the estimation period (in which the present value interest factor has become exponentially lower), often resulting in negative present values. Management will often still invest in such projects because they have the choice to stop investing or continue investing based on failing to reach, reaching, or exceeding certain targets related to time-based milestones. Management also may be willing to invest small amounts in a portfolio of such projects (which they may discontinue midstream on an individual project basis) in anticipation of the occasional big payoff. A tradition-based observer might conclude that management has acted irrationally to invest in one or more projects with negative net present value, whereas emerging theory might suggest that the DCF method is inaccurate or incomplete when used in a circumstance of high risk (uncertainty) and multiple choice points in the future.

G.03 Real options can be thought of as an extension of the OPM. The most frequently encountered application of the OPM is in its role as an allocation method (that is, in situations in which the aggregate value of equity has been determined by some other method, such as a DCF analysis, and this value then becomes the underlying asset in the OPM to facilitate the allocation of value to preferred and common stock). In these situations, the value of the common stock, once determined, becomes an input into a third valuation model, such as a Black-Scholes model, to arrive at the value of employee stock options (ESOs). However, the OPM in its more flexible forms, including the binomial method discussed subsequently, can also be used to simultaneously value the underlying asset, allocate the value to various classes of equity, and value the

¹ See paragraphs 4.37–38. Note that this appendix presents a brief introduction to real options. It is not intended to be a definitive survey of the topic.

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new ESOs. In summary, three valuation steps are collapsed into one modeling exercise.

G.04 Using real options as a valuation technique can address situations in which the subject company faces multiple future risks, and these risks resolve in different ways, over different time frames, or both. Often, future financing rounds are contingent on the resolution of these risks. The advantage of real options analysis in these circumstances is the ability to capture all the key variables and their interactions in a single framework and to model the complexity of the actual business situation.

G.05 As an illustration of real options analysis, consider the following situation:

- A business opportunity is under development that, but for the risk of technological failure, is currently valued at \$1 million.
- The current capital structure includes both Series A preferred and common stock.
- The annual volatility of this opportunity is 60 percent.
- The opportunity will require external financing of \$500,000 at the end of year 1 (Series B) and \$1 million of external financing at the exit event: end of year 3 (Series C).
- The external financing at the end of year one is contingent upon
 - the successful achievement of a technology milestone.
 - the *postmoney value* of the opportunity—if the opportunity is worth less than \$500,000 at the end of year 1, no financing will be obtained.
- The probability of technological success is estimated to be 75 percent.
- The external financing at time of exit is contingent on the post-money value of the opportunity at the end of year 3.
- The risk-free rate is 4 percent.

To capture the risks identified in the preceding, the opportunity is modeled as a compound real option that has two exercise prices at two different dates. In this initial example, the underlying asset has a but for present value of \$1 million; an exercise price of \$500,000 at the end of year 1 (option 1); and a second exercise price of \$1 million at the end of year 3 (option 2).

G.06 To solve for the value of the aggregate equity, the first step is to model the evolution of the value of the underlying opportunity. An asset tree showing the possible evolution of the but for value over the three-year period is presented in the following:²

² The lattice presented here is a Cox-Ross-Rubinstein lattice with values in thousands of dollars. For simplicity, all examples shown in this appendix present a three-year tree in three-month steps. In an actual valuation, more steps would be required.

Asset Tree

Quarter	0	1	2	3	4	5	6	7	8	9	10	11	12
Value of opportunity	1,000	1,350	1,822	2,460	3,320	4,482	6,050	8,166	11,023	14,880	20,086	27,113	36,598
		741	1,000	1,350	1,822	2,460	3,320	4,482	6,050	8,166	11,023	14,880	20,086
			549	741	1,000	1,350	1,822	2,460	3,320	4,482	6,050	8,166	11,023
				407	549	741	1,000	1,350	1,822	2,460	3,320	4,482	6,050
					301	407	549	741	1,000	1,350	1,822	2,460	3,320
						223	301	407	549	741	1,000	1,350	1,822
							165	223	301	407	549	741	1,000
								122	165	223	301	407	549
									91	122	165	223	301
										67	91	122	165
											50	67	91
												37	50
													27

This lattice shows the impact of the expected volatility of 60 percent on the value of the underlying opportunity. At the end of the first 3-month period, the value will have moved up (across) to \$1.350 million, or down (diagonally) to \$741,000. This process is repeated until, at the expected exit date in 3 years, the opportunity's value is expected to range from a high of \$36.598 million (12 consecutive up moves, a very small probability) to a low of \$27,000 (12 consecutive down moves, also a very small probability).

G.07 The next step is to solve for the value of this sequential option. If there were no technology risk, the aggregate equity value would be approximately \$166,000, as shown in the following solution tree:

Solution Tree

Period	0	1	2	3	4	5	6	7	8	9	10	11	12
Value of current equity	165.83	325	618	1,127	1,928	3,556	5,108	7,215	10,062	13,909	19,105	26,123	35,598
		43	98	225	513	1,577	2,391	3,530	5,089	7,196	10,043	13,890	19,086
			0	0	0	585	961	1,532	2,359	3,511	5,069	7,176	10,023
				0	0	163	297	526	903	1,489	2,340	3,492	5,050
					0	29	60	121	237	455	842	1,470	2,320
						3	6	13	30	69	157	360	822
							0	0	0	0	0	0	0
								0	0	0	0	0	0
									0	0	0	0	0
										0	0	0	0
											0	0	0
												0	0
													0

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The highest year 3 (period 12) outcome of \$35.598 million is calculated by taking the highest possible asset value of \$36.598 million less the \$1 million exercise price (that is, the \$1 million of dilution impact to the existing investors attributable to the Series C investment). More generally, the Series C round is successful only if the opportunity is worth more than the required investment of \$1 million. The financing will be obtained at any of the top six nodes in the asset tree that have values in excess of \$1 million. The solution tree therefore has six in-the-money solutions in which the *premoney values* (total value net of the required new money of \$1 million at time of exit) range from \$822,000 to \$35.598 million.

The highest year 1 (period 4) outcome of \$1.928 million is calculated by rolling back the tree, given the lattice probabilities and period 5 values. In this example, there is a 44.2 percent chance of an up step (period 5 value of \$3.556 million) plus a 55.8 percent chance of a down step (period 5 value of \$1.577 million) and, thus, an overall expected period 5 value of \$2.452 million. This amount is then discounted at the risk-free rate of 4 percent (1 percent per quarter), producing a value of approximately \$2.428 million. Because this value is in the money, the \$500,000 Series B round is successful. Reducing the value of the opportunity by the exercise price (that is, the \$500,000 of dilution impact to the existing investors attributable to the Series B investment), the net value is \$1.928 million. This net value is the value retained by the Series A and common stockholders on this path.

G.08 All options, whether simple or complex, are solved in the same manner: future to present, or right to left. Consequently, option 2 is addressed first. The preceding solution starts at the time of exit (end of period 12), at which time the Series C investment decision is made. These period 12 net values are then probability weighted and discounted back 1 period at the risk-free rate of 4 percent (or approximately 1 percent per quarter) to arrive at period 11 values. The same process is repeated at each preceding period.

G.09 At year 1 (period 4), option 1 needs to be evaluated. The Series B round will be successful only if the value of the opportunity exceeds the \$500,000 strike price. Thus, the year 1 (period 4) values in the preceding have been probability weighted, discounted, and then compared to the \$500,000 strike price. If the value exceeds \$500,000, these Series B proceeds are deducted; if it is less than \$500,000, the hoped-for financing is not obtained, and the opportunity is abandoned.

G.10 The net values across all paths are weighted and discounted back to the valuation date, producing a value of \$165,830, the total net value shared by the Series A and common stock investors.

G.11 This model is now extended to address the risk of technological failure. For this example, there is a 75 percent chance of technical success, which is expected to be resolved at the end of the first year. The revised solution tree is presented as follows:

Revised Solution Tree

<i>Period</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>
Value of current equity	124.37	243	463	845	1,446	3,556	5,108	7,215	10,062	13,909	19,105	26,123	35,598
		32	74	169	385	1,577	2,391	3,530	5,089	7,196	10,043	13,890	19,086
			0	0	0	585	961	1,532	2,359	3,511	5,069	7,176	10,023
				0	0	163	297	526	903	1,489	2,340	3,492	5,050
					0	29	60	121	237	455	842	1,470	2,320
						3	6	13	30	69	157	360	822
							0	0	0	0	0	0	0
								0	0	0	0	0	0
									0	0	0	0	0
										0	0	0	0
											0	0	0
												0	0
													0

Note that in the previous example, the highest period 4 value was \$1.928 million. Now, however, because there is only a 75 percent chance of technical success, the highest value is reduced to \$1.446 million. Thus, the model indicates that, as is frequently the case, new (Series B) investors will provide funds only if the technological risk is favorably resolved.

G.12 In summary, despite its complexities, real options analysis can be a useful valuation tool for early-stage companies.

Appendix H

Rights Associated With Preferred Stock

H.01 As discussed in chapter 6, "Valuation of Equity Securities in Complex Capital Structures," preferred stock has characteristics that allow preferred stockholders to exercise various economic and control rights. Each of those rights is described in this appendix.

H.02 Note that different classes of preferred stock typically have different rights and preferences. Typically, the latest round of preferred stock has superior features because the new investors and existing investors who are willing to continue funding the company require such features. In an *up round*, the new round may be *pari passu* (of equal seniority) with previous rounds, but it will have a higher price and, therefore, a higher total liquidation preference. In other situations, the latest round may be senior to previous rounds, have a liquidation preference greater than its purchase price, or have other economic and noneconomic rights. Therefore, it is important to consider the rights and preferences of the various rounds of preferred stock when estimating the total equity value and its allocation to the various equity securities. It is not appropriate to assume that the previous rounds of preferred stock have the same value as the latest round.

Economic Rights

H.03 *Preferred liquidation preferences.* Preference in liquidation generally is considered one of the key differentiating factors between preferred and common stock because it gives first priority rights to preferred stockholders over any equity proceeds available to common stockholders resulting from a liquidation of the enterprise. Liquidation preference distributions are meaningful and substantive because they apply not only in the event of dissolution of the enterprise but also in the event of a merger, sale, change of control, or sale of substantially all assets of an enterprise. A merger, sale, change of control, sale of substantially all assets, and dissolution are collectively referred to as a liquidation (which differs from a liquidity event in that a liquidity event also includes an initial public offering [IPO]). No portion of the proceeds resulting from a liquidation may be distributed to the common stockholders unless a specified portion of the liquidation preference has been satisfied. Liquidation preferences not only grant preference in distribution to holders of preferred stock but also quantify the amount of returns or distributions that preferred stockholders are entitled to receive before any distribution may be made to common stockholders. As a consequence, liquidation preference rights often result in distributions between preferred and common stockholders that disproportionately benefit preferred stockholders relative to their percentage ownership of the enterprise.

H.04 Liquidation preferences may be broadly divided into two categories:

- a. Nonparticipating preferred.* In a liquidation, the holder of nonparticipating preferred stock is entitled only to receive the fixed liquidation preference amount and does not share any upside beyond that preference. Alternatively, the preferred stockholder may give up liquidation preference and convert into common stock if such a conversion will provide higher proceeds.

- b. *Participating preferred.* In a liquidation, the holder of participating preferred stock is entitled to receive its liquidation preference first and then share pro rata with the common stock in any remaining liquidation proceeds without requiring the conversion of such preferred stock into common stock. The total return to preferred stock in this scenario may be limited (for example, three times the original purchase price of the preferred stock) or unlimited. If the upside is unlimited, the preferred stockholder will not have an incentive to voluntarily convert to common stock. If the upside is limited, the preferred stockholder may elect to convert the preferred stock to common stock if such conversion would result in a higher total return to the stockholder.

H.05 Liquidation preferences are most commonly equal to the cost of the preferred stock. However, in cases in which the issuer has raised several rounds of financing, when the investor is uneasy regarding the valuation of the financing round, or when the investor otherwise has significant leverage in the transaction, the liquidation preference may equal a multiple of the purchase price (commonly two to four times). Such a feature can result in a dramatically improved return for holders of preferred stock relative to the common stock in outcomes in which the preferred stock does not convert to common stock.

H.06 Liquidation preferences are particularly important in a non-IPO situation, such as an acquisition or a sale of all or substantially all of an enterprise's assets. This is because provisions relating to the conversion of preferred stock to common stock typically require that all outstanding preferred stock automatically convert to common stock in the event of a qualified IPO. Such conversion is typically a prerequisite for an investment banker to market the IPO. A consequence of such conversion is that the liquidation preferences and most other special rights associated with preferred stock, with the exception of registration rights, are eliminated. Accordingly, the value of liquidation preferences and other preferred stock rights often diminishes as the likelihood of a qualified IPO increases. Generally, if a proposed IPO does not meet the requirements of a qualified IPO, the consent of at least a majority of the holders of preferred stock is required to convert all preferred stock to common stock and permit the IPO to proceed.

H.07 In evaluating the likelihood of a qualified IPO and the resulting effect of such IPO on the value of the preferred stock preferences, however, the economic and control rights of preferred stockholders should be considered carefully. If preferred stock liquidation preferences significantly exceed the return that preferred stockholders would receive on conversion to common stock, preferred stockholders will have an incentive to exert their control rights toward consummation of an acquisition of the enterprise rather than an IPO. Accordingly, even in circumstances in which an IPO may appear feasible for an enterprise in view of its stage of development, the value of liquidation preferences and other preferred stock rights often does not diminish if the preferred stockholders have the incentive and ability to steer the enterprise toward an acquisition. In such cases, the value of preferred rights and liquidation preferences typically remains at a high level until a qualified IPO actually occurs.

H.08 The following example illustrates the effect of liquidation preference rights in disproportionate value sharing between preferred and common stockholders:

Company A has 3 million shares of Series A preferred stock and 7 million shares of common stock outstanding. The Series A preferred stock was issued for \$20 million and carries participating liquidation preference rights with a total liquidation preference of two times the original issuance price. That is, upon a liquidation of Company A, Series A preferred shares would initially receive \$40 million of the sales proceeds before any amount of money could be distributed to common stockholders. After the payout of the initial preference, the Series A preferred and common stockholders participate ratably in the remaining proceeds of the liquidation. Assuming three different scenarios in which Company A is acquired for a purchase price of \$50 million, \$75 million, and \$200 million, respectively, the following would be the payoffs to Series A preferred stockholders and common stockholders:

	<i>Scenario I</i>	<i>Scenario II</i>	<i>Scenario III</i>
Sales proceeds (A)	\$50,000,000	\$75,000,000	\$200,000,000
Liquidation preference of Series A preferred stockholders	\$40,000,000	\$40,000,000	\$ 40,000,000
Initial distribution of liquidation preference of Series A stockholders (B)	\$40,000,000	\$40,000,000	\$ 40,000,000
Balance available for ratable allocation to preferred and common stockholders in the ratio of their ownership interests (30% and 70%) [(C) = (A) – (B)]	\$10,000,000	\$35,000,000	\$160,000,000
Allocation of balance to preferred shareholders [(D) = (C) × 30%]	\$ 3,000,000	\$10,500,000	\$ 48,000,000
Allocation of balance to common stockholders [(E) = (C) × 70%]	\$ 7,000,000	\$24,500,000	\$112,000,000
Total proceeds to:			
Preferred stockholders [(B) + (D)]	\$43,000,000	\$50,500,000	\$ 88,000,000
Common stockholders (E)	\$ 7,000,000	\$24,500,000	\$112,000,000
Relative allocation of enterprise value to:			
Preferred	86%	67%	44%
Common	14%	33%	56%

H.09 Preferred dividends. Preferred dividends or preferred stockholder rights to dividends may be classified according to priority, level of board of

directors' discretion, and whether they are cumulative. Preferred stock dividends generally are set at a percentage of the preferred stock purchase price, such as 10 percent. Preferred stockholders generally are entitled to dividends in priority to common stockholders. Typically, preferred stockholders are entitled to payment of dividends only if and when they are declared by the board. After payment of percentage-based dividends, as described previously (also known as initial dividends), holders of preferred stock also may be entitled to participate in any dividends to be paid to the holders of common stock. Noncumulative dividends that are not declared or paid in a given year do not carry forward into or become payable in subsequent years. Accordingly, if an enterprise operates in an industry in which it is not the practice to declare or distribute dividends to preferred or common stockholders, noncumulative preferred dividend rights typically are not meaningful or substantive. In some financings, preferred dividends are cumulative, which means that if initial dividends are not declared and paid in one year, the amount of such initial dividends is added to the initial dividends for the following year, and so on.

H.10 The existence of unpaid cumulative dividends becomes more relevant upon the payment of dividends or the liquidation (as defined in the next paragraph) of an enterprise and, in some cases, may be relevant to the conversion of preferred stock into common stock and the voting of an enterprise's outstanding stock. If an enterprise wishes to pay dividends to its stockholders, the application of first priority cumulative dividends is clear. In the event of a liquidation, cumulative dividends generally are treated as additional investment by preferred stockholders in the enterprise, such that each preferred stockholder receives additional liquidation proceeds if cumulative dividends have not been paid in prior periods. Similarly, if the conversion or voting of the preferred stock is calculated to include accrued but unpaid dividends, this will result in a greater than one-for-one ratio for purposes of conversion or voting of the preferred stock. Therefore, the right to cumulative dividends adds substantive value to preferred stock in the form of a higher rate of return to preferred stock on payment of dividends or a liquidation and, in some cases, an increased preferred-to-common conversion ratio and enhanced voting power.

H.11 *Mandatory redemption rights.* A mandatory redemption right is, in substance, a put provision and allows an investor to redeem its investment; typically, it is designed to allow an investor to exit from an investment in an enterprise before the occurrence of a liquidity event. As a result, such rights serve as a tool for preferred stockholders to motivate the enterprise to explore various liquidity alternatives on an ongoing basis. Enforcement mechanisms that accompany these rights are important. For instance, a right to elect a majority of the board of directors will give an investor the ability to compel the sale of the enterprise. In practice, an investor will not be able to redeem the investment if such redemption leads the enterprise to lose significant liquidity.¹

H.12 *Conversion rights.* These rights allow preferred stockholders to convert their shares into common stock at their discretion. Preferred stockholders will choose to convert to common stock if such conversion produces better economic results for them. The conversion ratio may be fixed or variable. Variable conversion rights are more powerful than fixed rights because variable rights often are structured to allow a better payoff to preferred stockholders. Conversion rights often are subject to adjustment by operation of the antidilution

¹ See note 4 to table 6-1.

rights described subsequently and, in some cases, are also subject to adjustment for unpaid cumulative dividends, as described previously, or failure by the enterprise to achieve certain milestones.

H.13 Participation rights. After the holders of preferred stock receive their full liquidation preference (as noted in paragraph H.04), their participation rights entitle them to share with the holders of common stock in the remaining amount being paid for the company. For example, if a company is sold for \$100 million, the preferred stock has a liquidation preference of \$20 million, and the preferred stock represents 40 percent of the total number of outstanding shares of the company, then the \$100 million would be distributed among stockholders as follows:

- a. The first \$20 million is paid to the preferred shareholders per the stated liquidation preference.
- b. The remaining \$80 million is split as follows:
 - i. Preferred stockholders receive their 40 percent pro rata share (\$32 million) per their participation rights.
 - ii. Common stockholders receive the remaining 60 percent (\$48 million).

Participation rights are described as capped when the participation rights of the preferred stock are limited so that the preferred stock stops participating in the proceeds of a sale after it has received back a predetermined dollar amount, usually expressed as "X" times the liquidation preference. For example, a three times participation right in the forgoing example would cap the amount the preferred shareholders could receive at \$60 million. So, if the company were sold for \$200 million, then the preferred shareholders would only receive \$60 million, not \$72 million based on a 40 percent participatory right.

H.14 Antidilution rights. These rights are designed to prevent or reduce dilution of the holdings of preferred stockholders in the event of subsequent *down rounds* of financing. Antidilution rights are powerful rights providing downside economic protection to preferred stockholders. These rights result in an automatic adjustment of the original conversion ratio of preferred stock to common stock in the event that an enterprise subsequently issues stock at a price per share below the original issue price of the existing preferred stock. Antidilution rights may be broadly divided into three categories, *full ratchet* and two types of *partial ratchet*:

- a. *Full ratchet.* The conversion price of the previously issued preferred stock is adjusted to the new round price, regardless of the dilutive effect of a new issuance. Full ratchet antidilution rights tend to become increasingly prevalent in difficult financing environments when investors have increased leverage, and there is increased uncertainty about a company's valuation and prospects. For example, if 10,000 shares of preferred stock are outstanding with a \$10 conversion price and \$10 original issuance price, and a subsequent round of 1,000 shares is issued at a \$5 conversion price, the conversion price of the original 10,000 shares will be adjusted to \$5. Accordingly, the conversion ratio, which is the original purchase price divided by the conversion price, will now equal 2 (\$10 divided by \$5), and the same 10,000 originally issued shares of preferred stock will now convert into twice as many shares of common stock.

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- b. *Partial ratchet: narrow-based weighted average.* This alternative is less onerous than full ratchet and takes into account both the lower issuance price of new stock and the size of the new issuance relative to the enterprise's outstanding preferred stock. The formula for calculating the new conversion price of the old preferred shares is as follows:

$$\text{Original issue price of old preferred shares} \times (A + B)/(A + C)$$

A = outstanding preferred capitalization (number of shares)

B = total dollar amount paid for new shares divided by the price per share paid for old preferred shares

C = number of new shares actually issued at new price

Assuming the same facts as in item (a), the conversion price of the old shares would be adjusted to

$$\begin{aligned} & \$10 \times [10,000 + (\$5,000/\$10)]/[10,000 + (\$5,000/\$5)] \\ & = \$10 \times (10,500/11,000) = \$9.55 \end{aligned}$$

Therefore, 1 share of old preferred stock will now convert into \$10/\$9.55, or 1.047 shares of common stock.

- c. *Partial ratchet: broad-based weighted average.* This is the most common alternative and is less onerous than either the full ratchet or narrow-based weighted average alternatives and further takes into account the size of the new issuance relative to the enterprise's entire capital base, instead of just the outstanding preferred stock. Although there is no single definition of broad based, the most common formulation is to take into account the effect of the new issuance on the total capitalization of the enterprise, including common stock, preferred stock, and outstanding options and warrants (and, in rare cases, the pool of options reserved for future grants). The formula for calculating the new conversion price of the old preferred shares is as follows:

$$\text{Original issue price of old preferred shares} \times (A + B)/(A + C)$$

A = outstanding common stock, preferred stock, options, and warrants (number of shares)

B = total dollar amount paid for new shares divided by the price per share paid for old preferred shares

C = number of new shares actually issued at new price

In item (a), assuming that the enterprise's outstanding capitalization includes 9,000 shares of common stock, 1,000 additional shares of common stock subject to outstanding options or warrants, and 10,000 shares of preferred stock, the conversion price of the old shares would be adjusted to

$$\begin{aligned} & \$10 \times [20,000 + (\$5,000/\$10)]/[20,000 + (\$5,000/\$5)] \\ & = \$10 \times (20,500/21,000) = \$9.76 \end{aligned}$$

Therefore, 1 share of old preferred stock will now convert into \$10/\$9.76, or 1.024 shares of common stock.

H.15 *Registration rights.* Registration rights come into play when an enterprise does not complete an IPO within a specified period, at which time the holders of a specified percentage of preferred stock are generally entitled to demand that the enterprise exercise its best efforts to complete an IPO. Furthermore, if an enterprise has completed an IPO, the outstanding preferred stock generally converts into common stock, and the holders of a specified percentage of such converted stock are entitled to demand that the enterprise use its best efforts to complete a secondary public offering of their converted shares or otherwise register their shares for public trading within a certain period. These registration rights survive the enterprise's IPO and continue to add value in the form of enhanced liquidity to preferred stockholders whose shares have converted to common stock.

Control Rights

H.16 *Voting rights.* These are rights of preferred stockholders to vote together with common stockholders on matters requiring a stockholder vote and, in addition, to vote on certain matters as a separate class. Each share of preferred stock generally has votes equal to the number of shares of common stock then issuable upon conversion of preferred to common. As described under the descriptions in this appendix of preferred dividends, conversion rights, and antidilution rights, the rate of conversion of preferred stock to common stock and the resulting number of votes per share of preferred stock are subject to adjustment.

H.17 *Protective provisions and veto rights.*² These rights give preferred stockholders the ability to veto major actions of an enterprise in a manner disproportionate to their percentage ownership. These provisions and rights require that the enterprise obtain the consent of at least a fixed percentage of preferred stockholders prior to taking significant actions. Investors also may require and receive individual series-based protective provisions, in addition to the protective provisions that apply to all preferred stock. As a result, enterprises may be required to obtain the consent of a specified percentage of all preferred stock, as well as specified percentages of certain series of preferred stock, prior to taking significant corporate actions. Through such series-based distinctions, protective provisions have become an even more powerful tool for certain preferred stock investors to exercise veto rights well in excess of their rights based on percentage ownership alone. Examples of the significant corporate actions that require the consent of a specified percentage of preferred stock and, in many cases, specified percentages of particular series of preferred stock are as follows:

- Changes in the rights of preferred stockholders
- Increases or decreases in the number of shares of preferred stock or creation of any new class or series of stock having rights senior to, or on par with, existing preferred stock
- Declaration of dividends or any other distribution to stockholders or repurchase of outstanding stock

² This discussion is not intended to cover protective or veto rights addressed in Financial Accounting Standards Board *Accounting Standards Codification* 810-10-25.

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- Merger, acquisition, corporate reorganization, change of control, or any transaction in which all or substantially all of the enterprise's assets are sold
- Amendments or waivers of any provision of the enterprise's certificate of incorporation or bylaws that would change the rights of preferred stockholders
- Increase or decrease in the authorized size of the board of directors
- Appointment of a new CEO

In some cases, the protective provisions include additional matters that are typical covenants in debt transactions, such as

- any material change in the nature of the enterprise's business.
- any transfer or exclusive license of the enterprise's technology or intellectual property, other than such transfers or licenses that are incidental to the sale of the enterprise's products in the ordinary course of business.
- the incurrence of indebtedness in excess of a prespecified amount (for example, \$1 million).
- any material change in the enterprise's accounting practices or any change in the enterprise's external auditors.

H.18 *Board composition rights.* Preferred stockholders with these rights have the ability to control the board composition in a manner that is disproportionate to their share ownership. The holders of each class of stock are entitled to elect a fixed number of directors, regardless of the holders' respective ownership. Generally, board composition rights lead to control of the enterprise. Typically, investors in earlier rounds insist on board representation. In some cases, when investors purchase a significant percentage of the company or otherwise have significant leverage in the financing, investors in the latest series of preferred stock may insist on the right to appoint a majority of the board. This results in a further concentration of control in a single series of preferred stock well in excess of that series' percentage ownership of the enterprise.

H.19 *Drag-along rights.* These rights allow majority of one class of shareholders to compel the holders of one or more other classes of shares to vote their shares as directed in matters relating to the sale of the enterprise.

H.20 *Right to participate in future rounds.* Each preferred stockholder with this right is allowed to purchase a portion of any offering of new securities of the enterprise based on the proportion that the number of shares of preferred stock held by such holder (on an as-converted basis) bears to the enterprise's fully diluted capitalization or to the enterprise's total preferred equity. The right to participate in future rounds gives the preferred stockholders the ability to maintain their respective ownership percentages and restrict the ability of common stockholders to diversify the shareholdings of the enterprise.

H.21 *First refusal rights and tag-along rights.* Preferred stockholders with these rights may effectively limit the sale of common stock held by the enterprise's founders and other key members of management by allowing the preferred stockholders the right to purchase such shares from the founders at the price offered by a third party (first refusal) and requiring that the founders allow preferred shareholders to substitute their shares for shares to be sold by the founders in proportion to those shareholders' percentage ownership of the

sales price (tag along). Generally, these are designed to reduce the liquidity of common stock held by founders and thereby enhance the value of the preferred stock.

H.22 *Management rights.* These rights entitle preferred stockholders to standard inspection rights (rights to inspect in detail the enterprise's books and accounts), as well as rights to visit board meetings. These rights may be in place of rights to nominate directors or may be available if, for some reason, the preferred stockholders do not want to exercise their rights to nominate a director.

H.23 *Information rights.* Preferred stockholders with information rights have the ability to be granted access to prespecified information, such as monthly financial statements within a specified period following each month end, the annual operating plan within a specified period prior to the beginning of the fiscal year, and audited financial statements within a specified period following the enterprise's fiscal year-end. These rights provide preferred stockholders timely access to vital information that may not be available to common stockholders.

H.24 In summary, preferred stock rights not only offer the holders the opportunity for disproportionate returns on their investments but also may provide downside protection. In addition, preferred stock rights may provide investors with degrees of control over the enterprise that are disproportionate to their ownership percentages. The valuation challenge is to identify objective methods of quantifying premiums attributable to those rights.

Appendix I

Illustration of Methods for Valuing Equity Securities

Note: The examples in this appendix are provided only to demonstrate concepts discussed in the preceding chapters of this guide and are not intended to establish requirements. Furthermore, the assumptions and inputs used in these examples are illustrative only and are not intended to serve as guidelines. Facts and circumstances of each individual situation should be considered when performing an actual valuation.

I.01 This appendix illustrates three of the methods for valuing equity securities discussed in chapter 6, "Valuation of Equity Securities in Complex Capital Structures."¹ The order in which the methods are illustrated in this appendix is intended to facilitate understanding how each method works; however, this order differs from the order in which these methods are presented in chapter 6. In addition, for simplicity and to facilitate comparison, the same set of facts and information is used to illustrate several of the methods. As discussed in chapter 6, not all methods are expected to be equally appropriate to apply in a single set of actual circumstances. Selection of one method or another depends on a number of factors relating to the specific facts and circumstances of the enterprise and its various classes of equity securities. Finally, the capital structures illustrated in this appendix are simple and straightforward for illustration purposes. In practice, the capital structures of privately held companies are typically more complex because the investments may be made at several different times, with each issuance having its own particular set of specific economic and control rights. In addition, the capital structures will typically also include outstanding and soon-to-be issued employee stock options and may also include warrants or other dilutive securities. These securities should be included in the option pricing method (OPM) or probability-weighted expected return method (PWERM) using appropriate additional breakpoints to model their participation. For simplicity, these examples do not include these additional securities. In sum, the illustrations in this appendix trade off many of the complexities of actual practice situations in favor of understandability of the methods.

I.02 The following is an outline of appendix I:

¹ Because the current-value method (CVM) is applicable only in limited circumstances, the CVM is not illustrated in this appendix.

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Hybrid Method	I.33
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OPM—Equity Allocation	I.58–I.61
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Example 1: Venture Capital-Backed Start-Up

I.03 Palestra Systems, Inc. (the Company) is a developer of networking products, both hardware devices and the software necessary to support them.² The Company was founded in 2X05, and its headquarters and manufacturing facilities are located in Philadelphia, Pennsylvania. Until December 2X07, the Company's sole source of equity capital was the founders and their family and friends. Equity capital at that time consisted solely of 11.25 million outstanding shares of common stock.

² Fictitious company for illustration purposes.

June 30, 2X09, Valuation

I.04 On June 30, 2X09, the Company completed an offering of Series A convertible preferred stock. The issue comprised 7.5 million shares, with the following rights and preferences:

Liquidation preference. Payments upon dissolution, merger, acquisition, or sale of assets are to be paid first to Series A preferred shares at \$1 per share. Any amount remaining is paid to the common shareholders based on their respective ownership. Series A preferred shares do not participate beyond this initial preference, unless converted.

Conversion rights. The Series A is convertible into common stock at the ratio of one share of common for each share of preferred converted. The Series A convertible preferred is voluntarily convertible into common stock upon a sale or merger of the Company and automatically convertible into common stock upon an initial public offering (IPO).

Protective provisions. Preferred shareholders are entitled to approve financing, acquisition, and other significant corporate transactions.

Control of board of directors. The board of directors consists of six directors. Election provisions are as follows: Series A preferred shareholders are entitled to elect four directors, and two directors are elected by the common shareholders.

Drag-along rights. Holders of a majority of Series A preferred shares may force all other holders of Series A preferred shares and all holders of common stock to vote in favor of an acquisition transaction.

Antidilution; right to participate in future rounds. A holder of a significant number of shares of Series A preferred is automatically entitled to participate in future financing rounds.

I.05 In July 2X09, the Company retained the services of a nationally recognized firm with expertise in providing valuations (the Specialist or Firm) to estimate the fair value of its common stock as of June 30, 2X09. The Firm considered the various methods to allocate the total enterprise value between common and preferred stock, as described in chapter 6. The Company's enterprise value was estimated using the backsolve method, as described in chapter 4, "Overview of Valuation Approaches," resulting in an estimated total equity value for the Company of approximately \$15.654 million. The market, income, and asset approaches to enterprise valuation were considered in order to reconcile to the enterprise value estimated using the backsolve method.

The OPM: June 30, 2X09

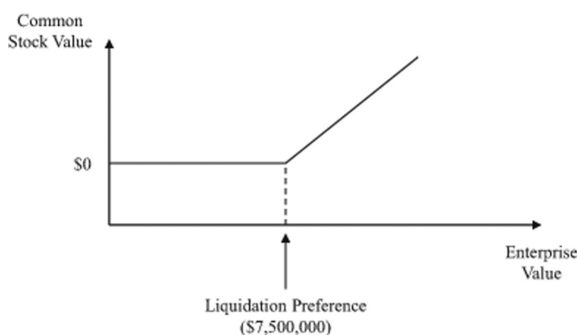
I.06 Under the OPM, each class of stock is modeled as a call option with a distinct claim on the enterprise value of the Company. The option's exercise price is based on a comparison with the enterprise value (versus regular call options that typically involve a comparison with a per-share stock price). At the time of a liquidity event, both the common stock and preferred stock have payoff diagrams (see figure I-1, "Payoff to Common Shareholders Under a Liquidity Event," and figure I-2, "Payoff to Common and Preferred Shareholders in a Liquidity Event," for examples) that are similar to the payoff diagrams of

regular call options. The characteristics of each class of stock, including the conversion ratio and any liquidation preference of the preferred stock, determine the class of stock's claim on the enterprise value.

I.07 The modeling of common stock as a call option on the Company's enterprise value is as follows. If, at the time of a liquidity event, the equity value is less than the total liquidation preference of the preferred stock, the value of the common stock is zero. Conversely, if the equity value exceeds the total liquidation preference of the preferred stock, the aggregate value of common equity will be worth \$1 for each dollar of equity value in excess of the total liquidation preference (as long as the preferred stock remains outstanding). For the Company, if a liquidity event occurs, then because of the Series A seniority over common stock, the proceeds would first satisfy the \$7.5 million liquidation preference of the Series A shareholders. The remaining proceeds would then belong to the common shareholders. Therefore, the common shares have value only if the proceeds from the liquidity event exceed \$7.5 million. The payoff diagram in figure I-1 (not drawn to scale) shows the initial payoff of the common shares in a liquidity event:

Figure I-1

Payoff to Common Shareholders Under a Liquidity Event



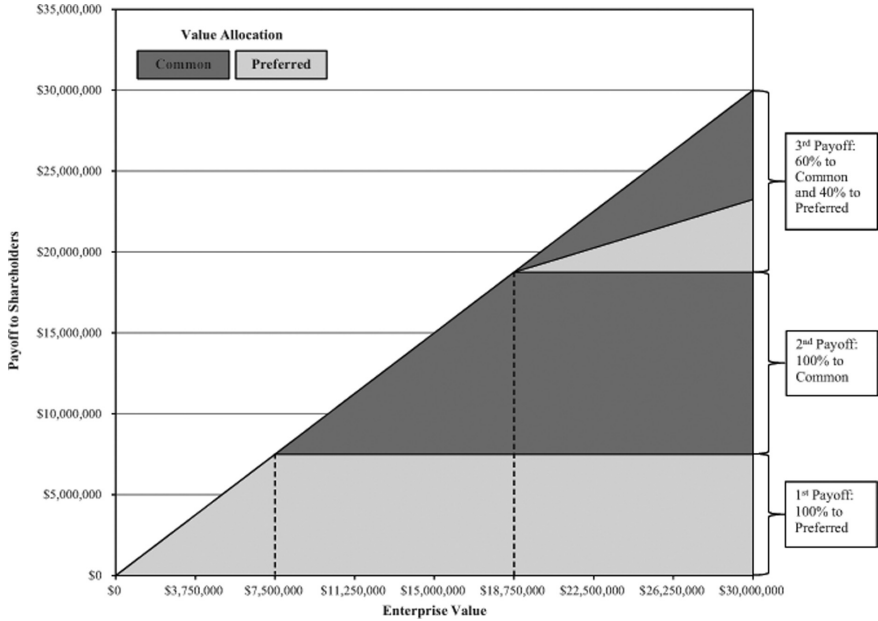
I.08 As illustrated in figure I-1, the total equity value will be attributed first to Series A preferred shareholders up to \$7.5 million, and no proceeds will be allocated to common shareholders up to that amount. Accordingly, preferred shareholders will not convert into common shares unless the fully diluted value of the common shares exceeds \$1 per share. Preferred shareholders have the potential for an alternate payoff when the fully diluted value of common stock exceeds the liquidation preference of Series A preferred shares. The calculation of the equity value that leads the Company's preferred shareholders to convert their shares into common shares is shown subsequently.

I.09 The fully diluted number of common shares in this example is 18.75 million (11.25 million common shares plus 7.5 million Series A convertible at 1:1). Therefore, Series A shareholders will convert their shares into common shares once the claim on enterprise value of each fully diluted common share exceeds the liquidation preference of \$1 per share. This would occur at any enterprise value over \$18.75 million (18.75 million shares multiplied by \$1 per share).

I.10 The payoff diagram in figure I-2 (not drawn to scale) shows the payoffs of the common and preferred shares for all possible enterprise values:

Figure I-2

Payoff to Common and Preferred Shareholders in a Liquidity Event



1st Payoff	Up to \$7,500,000	100% to preferred shareholders
2nd Payoff	\$7,500,000 to \$18,750,000	100% to common shareholders
3rd Payoff	Over \$18,750,000	60% to common shareholders, 40% to preferred shareholders

I.11 Considering the values of the common and preferred shares as call options on equity value, figure I-2 shows how the payoffs are allocated to each class. The first payoff (value up to the first breakpoint) belongs to the preferred shareholders who have a claim on enterprise value up to \$7.5 million. The second payoff (value between the first breakpoint and second breakpoint) is held by the common shareholders who receive all but the first \$7.5 million of the proceeds of a liquidity event for an enterprise value between \$7.5 million and \$18.75 million. The third payoff (value in excess of the second breakpoint) is shared by the common and preferred shareholders based on their respective ownership percentages (based on numbers of shares) after the preferred shares have converted into common shares (60 percent common and 40 percent preferred).

I.12 The value in excess of any given breakpoint is equal to a call option on the equity value with a strike price at that breakpoint. The values of the two classes of stock are then expressed as combinations of these call options. The preferred shareholders own 100 percent of the first call option (the total equity value or, equivalently, a call with a strike of zero), have given up the value of the entire second call option to the common shareholders (call option with a strike equal to the first breakpoint), and share in the 40 percent of the value of

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the third call option (call option with a strike equal to the second breakpoint). Thus, the payoff for the preferred shareholders equals the value of the first option, minus the value of the second option, plus 40 percent of the value of the third option.

I.13 Similarly, the common shareholders receive 100 percent of the value of the second call option but give up 40 percent of the third call option to the preferred shareholders. It can be shown that the payoff for common shareholders equals the value of the second option minus 40 percent of the value of the third option.

I.14 The Black-Scholes OPM is now applied to value the three call options.³ The inputs into the Black-Scholes formula are given by the following:

Underlying asset	\$15,654,000
1st exercise price	\$0
2nd exercise price	\$7,500,000
3rd exercise price	\$18,750,000
Time to liquidity	3.3 years (based on management's expected time to exit, as summarized in table I-1, "Time to Liquidity [and to Successful Exit] Assumptions") ⁴
Volatility	90% (based on the long-term historical volatilities of a set of other small-cap companies in this industry, adjusted for comparability) ⁵
Risk-free rate	5.1% (based on the 3.3-year interpolated U.S. Treasury rate)
Discount for lack of marketability ⁶	31%–42%, based on the 4.2-year time to a successful exit ⁷ and the expected common stock volatility ⁸

³ See footnote 10 in paragraph 6.30.

⁴ See footnote 11 in paragraph 6.33.

⁵ For this example, an expected volatility was estimated based on the long-term historical volatility of selected guideline companies, but the 75th percentile was used because even small-cap public companies are larger and more diversified than the Company. Implied volatilities were not considered because the selected small-cap guideline companies do not have traded options. Other methodologies for estimating volatility are acceptable and may be more appropriate in specific circumstances. The valuation specialist should consider the volatility that market participants would expect for the company over the time to liquidity used in the model.

⁶ Note that methods demonstrated in this appendix are not the only appropriate methods for estimating a discount for lack of marketability, and it is not the Equity Securities Task Force's intent to imply that the ranges of discounts shown are the only appropriate ranges. The selected discount should reflect the time to liquidity and risk, as well as the characteristics of the security. See paragraphs 7.16–.33 for a more detailed discussion.

⁷ See paragraph 7.26.

⁸ See paragraph 7.32 and the example in table I-15, "Series Volatility."

Table I-1**Time to Liquidity (and to Successful Exit) Assumptions**

Scenario	Probability	Timing (in Years)
I - IPO	5%	5.0
II - Sale/High	5%	5.0
III - Sale/Mid	15%	4.0
IV - Sale/Low	35%	4.0
V - Dissolution	40%	2.0
Time to liquidity (a)		3.3
Time to successful exit (b)		4.2

Notes:

- (a) Includes all successful exit and dissolution timing and probabilities.
- (b) Excludes dissolution timing and probability.

The results of the OPM are summarized in table I-2, "OPM Assumptions and Allocation of Total Equity Values." For the backsolve method, an iterative approach within the OPM is used to solve for the total equity value of the Company that is consistent with the Series A at \$1 per share, given the rights and preferences of each class of equity. These calculations resulted in an estimated total equity value of \$15.654 million.

Table I-2**OPM Assumptions and Allocation of Total Equity Values****Major Assumptions (US\$ in 000s, except per share amounts)**

Valuation date	6/30/20X9
Liquidity event date	10/16/2X12
Time until liquidity event (years) (a)	3.3
Total equity value (b)	\$15,654
Annual dividend rate for common stock	0.0%
Volatility (σ) (c)	90.0%
Risk-free rate (r) (d)	5.1%

(continued)

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OPM Assumptions and Allocation of Total Equity Values—continued

Allocation of Total Equity Values

Event	Strike Price	Call Option Value	Incremental Call Option Value	Series A	Common Stock	Total
Series A reach their liquidation preference	\$0	\$15,654	\$3,846	100.0%	0.0%	100.0%
Common begins participating	\$7,500	\$11,808	\$2,673	0.0%	100.0%	100.0%
Series A converts	\$18,750	\$9,135	\$9,135	40.0%	60.0%	100.0%
			\$15,654	\$7,500	\$8,154	
		Number of shares		7,500,000	11,250,000	
		Value per share (pre-DLOM)		\$1.00	\$0.72	\$0.72
		less: 31%–42% DLOM (e)			(0.23)	(0.30)
		Value per share (non-marketable basis)			\$0.50	\$0.42

Notes:

- Time to liquidity based on time to exit, including the dissolution timing and probability. See table I-1 for additional detail.
- Total equity value consistent with the cash flows under current ownership and the required rate of return of the investors who in aggregate have control of the business.
- Volatility estimated based on the historical equity volatility of comparable firms.
- Interpolated yield on a US treasury security with a maturity of 3.3 years, corresponding to the time to exit as described in note (a).
- DLOM based on the Finnerty (2012) and Asian protective put methods: 4.2-year term (time to successful exit), 103.4% common equity volatility, and 5.1% risk-free rate corresponding to the 4.2-year term. Note that these methods are not the only appropriate methods for estimating a DLOM; please see footnote 6 in paragraph I.14.

I.15 In summary, if a liquidity event occurs when enterprise value is less than \$7.5 million, all proceeds will be allocated to the preferred shareholders. Therefore, the preferred shareholders own all of the benefit from enterprise values up to \$7.5 million.

I.16 If a liquidity event occurs when enterprise value is between \$7.5 million and \$18.75 million, all proceeds in excess of the liquidation preference will be allocated to the common shareholders. Therefore, the common shareholders own all of the benefit from enterprise values from \$7.5 million to \$18.75 million.

I.17 If a liquidity event occurs when enterprise value is greater than \$18.75 million, the preferred stockholders will be economically compelled to convert their shares into common stock. Their 40 percent claim in the enterprise value will be worth more than their liquidation preference. Therefore, common and preferred stockholders benefit pro rata from upside benefit in excess of \$18.75 million.

June 30, 2X10, Valuation

I.18 On June 30, 2X10, the Company completed an offering of Series B convertible preferred stock. The issue comprised 10 million shares with an initial liquidation preference of \$1.50 per share. Holders of the Series B convertible preferred stock are not entitled to dividends. The Series B preferred stock participates pari passu with the Series A preferred stock upon a liquidity event and is convertible into common stock at the ratio of one share of common

stock for each share of preferred converted stock. It has the same rights as the Series A in all other respects. The Series B convertible preferred stock is voluntarily convertible into common stock upon a sale or merger of the Company and automatically convertible into common stock upon an IPO.

I.19 In July 2X10, the Company again retained the services of the Firm to estimate the fair value of its common stock as of June 30, 2X10. As of the June 30, 2X10, valuation date, the Company's desired liquidity event was an IPO,⁹ which management believed could be completed by June 30, 2X14. However, management also believed the Company would need to raise approximately \$20 million of additional capital in mid-2X11 through the issuance of 11.5 million shares of Series C preferred stock to remain in operations through 2X14. In the absence of additional capital, management believed the Company would either exit via a sale or merger or be dissolved.

The OPM: June 30, 2X10

I.20 Consistent with the Firm's analysis as of June 30, 2X09, the Company's enterprise value was estimated using the backsolve method, resulting in an implied total equity value that is consistent with the Company's Series B financing at \$1.50 per share. The backsolve method resulted in an estimated total equity value for the Company of approximately \$36.437 million. The market, income, and asset approaches to enterprise valuation were considered in order to reconcile to the enterprise value estimated using the backsolve method. Table I-3 summarizes the OPM allocation as of June 30, 2X10:

Table I-3

OPM Assumptions and Allocation of Total Equity Values

Major Assumptions (US\$ in 000s, except per share amounts)

Valuation date	6/30/2X10
Liquidity event date	2/4/2X13
Time until liquidity event (years) (a)	2.6
Total equity value (b)	\$36,437
Annual dividend rate for common stock	0.0%
Volatility (σ) (c)	80.0%
Risk-free rate (r) (d)	2.8%

(continued)

⁹ For purposes of this guide, references to an initial public offering (IPO) are often made based upon the simplifying assumption that an IPO is synonymous with a liquidity event. Valuation specialists should note that although an IPO and the valuation metrics established by an IPO can provide liquidity to the company and a useful benchmark for valuing shareholders' interests, an IPO seldom provides liquidity for all shareholders and may not provide certain shareholders with any liquidity. As a result, in analyzing assumptions to be made in connection with IPO scenarios, valuation specialists may consider whether it is appropriate to look beyond the IPO to address the liquidity implications and the continued risks and rewards of ownership of the securities covered by their valuation. If the post-IPO restrictions are an attribute of the security rather than an attribute of the holder, the valuation specialist should consider the impact of these additional restrictions on the value of the security. See paragraph 7.26.

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OPM Assumptions and Allocation of Total Equity Values—continued

Allocation of Total Equity Values

Event	Strike Price	Call Option Value	Incremental Call Option Value	Series A	Series B	Common Stock	Total
Series A, Series B reach their liquidation preference	\$0	\$36,437	\$13,829	33.3%	66.7%	0.0%	100.0%
Common begins participating	\$22,500	\$22,608	\$3,678	0.0%	0.0%	100.0%	100.0%
Series A converts	\$33,750	\$18,930	\$2,313	40.0%	0.0%	60.0%	100.0%
Series B converts	\$43,125	\$16,617	\$16,617	26.1%	34.8%	39.1%	100.0%
			\$36,437	\$9,870	\$14,999	\$11,568	
		Number of shares		7,500,000	10,000,000	11,250,000	
		Value per share (pre-DLOM)		\$1.32	\$1.50	\$1.03	\$1.03
		less: 30%–42% DLOM (e)				(0.31)	(0.43)
		Value per share (non-marketable basis)				<u>\$0.72</u>	<u>\$0.60</u>

Notes:

- Time to liquidity based on time to exit, including the dissolution timing and probability. See table I-4 for additional detail.
- Total equity value consistent with the cash flows under current ownership and the required rate of return of the investors who in aggregate have control of the business.
- Volatility estimated based on the historical equity volatility of comparable firms.
- Interpolated yield on a US treasury security with a maturity of 2.6 years, corresponding to the time to exit as described in note (a).
- DLOM based on the Finnerty (2012) and Asian protective put methods: 3.1-year term (time to successful exit), 107% common equity volatility, and 2.9% risk-free rate corresponding to the 3.1-year term. Note that these methods are not the only appropriate methods for estimating a DLOM; please see footnote 6 in paragraph I.14.

The PWERM: June 30, 2X10

I.21 As of the June 30, 2X10, valuation date, the Specialist also considered the PWERM. Under the PWERM, the fair value of an enterprise's common stock is estimated based upon an analysis of future values for the Company, assuming various possible future liquidity events. In this case, the liquidity events considered by the Specialist included an IPO, a strategic sale or merger, and a dissolution of the enterprise. Because the Company is a venture capital-backed enterprise, and the ownership group has clearly expressed the time horizon for their exit, the Specialist did not include a stay-private scenario (that is, a no-liquidity-event scenario). Share value is based upon the probability-weighted present value of expected future net cash flows (distributions to shareholders), considering each of the possible future events, as well as the rights and preferences of each share class.

I.22 Because the PWERM requires an explicit model of the full range of future exit scenarios, there is no single, generic method of applying the PWERM. A valuation specialist uses the method as a framework for building a model to use in his or her valuation engagements.

I.23 The steps in applying the PWERM are described in paragraph 6.24. Specifically, in applying the PWERM to the Company, the Specialist completed the following steps:

- The Specialist worked with management to estimate the probability, timing, and future value of the Company for each possible future liquidity event. Specifically, the Specialist considered an IPO scenario, three possible sale scenarios (high, medium, or low value), and a dissolution scenario.
- For each possible future liquidity event, the Specialist considered the rights and preferences of each shareholder class in order to determine the appropriate allocation of value between the share classes upon the liquidity event. Thus, in high-value scenarios, the preferred stock is assumed to convert, whereas in lower-value scenarios, the preferred stock will receive all or a portion of its liquidation preference.
- The Specialist calculated the probability-weighted cash flows to each share class, weighting each possible outcome by its probability.
- The Specialist discounted the probability-weighted cash flows to each share class to a present value using an appropriate risk-adjusted discount rate and then divided the present value allocated to each share class by the number of shares for each class to estimate a per-share value for each class.
- Finally, the Specialist considered whether any additional adjustments are appropriate to account for differences in the level of control and marketability among the share classes. See chapter 7, "Control and Marketability."

I.24 The PWERM incorporates additional information not used in the illustration of the OPM because it represents a fundamentally different value allocation method. Critical assumptions required to perform the PWERM include the following:

- *Valuations.* Expected valuations under each future event scenario, either a point estimate or range of possible values around each expected value. These are estimated based upon an analysis of the Company's cash flow forecasts, transactions involving sales of comparable shares in comparable private and public enterprises, and transactions involving sales of comparable enterprises. The probability distribution of the range of values may take many forms.
- *Timing.* Expected date of each event, either a point estimate or range of possible event dates around each expected date. These are estimated based upon discussion with the Company's management and analysis of market conditions. The probability distribution of the range of dates may take many forms.
- *Event probabilities.* Estimates of the probability of occurrence of each event are based on discussions with the Company's management and an analysis of market conditions, including, but not limited to, an analysis of comparable public enterprises and transactions.
- *Discount rates.* Estimates of the risk-adjusted rate of return an investor would require for each share class, given the risk inherent

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in the probability-weighted cash flows to each class.¹⁰ The estimates will vary based upon the risk associated with the specific enterprise and share class and will be determined based upon a review of observed rates of return on comparable investments in the marketplace.

- *Postallocation adjustments.* Estimates of appropriate minority or marketability discounts, if any, required in order to estimate the common share value, considering the differences in the degree of control and marketability of the common shares relative to the preferred shares, and to the extent these factors were not already considered in the selection of a discount rate for the common stock.

Inputs chosen for each of the assumptions listed in the preceding depend on the specific facts and circumstances of the Company, including market conditions.

I.25 A presentation of the assumptions used in the illustration for the Company is provided in table I-4, "PWERM Assumptions," as well as the results of applying the PWERM to the data. In the illustration, five possible liquidity events are considered. Each of the liquidity events considered, along with the associated probability, timing, and exit value, are illustrated in table I-4. The expected (estimated) exit values and dates were used for illustrative purposes only and are not intended to be indicative of actual or typical amounts. The detailed mathematical calculations that were performed for each value and date combination have been omitted for simplicity of illustration. (In practice, valuation specialists may use proprietary models to perform these calculations and to develop inputs for these calculations.)

Table I-4

PWERM Assumptions

Major Assumptions (US\$ in 000s, except as noted)

Scenario	Probability	Timing (in Years)	Exit Value	Probability Weighted Exit Value
I - IPO	10%	4.0	\$250.0	\$25.0
II - Sale/High	20%	3.0	\$170.0	\$34.0
III - Sale/Mid	30%	3.0	\$135.0	\$40.5
IV - Sale/Low	15%	3.0	\$55.0	\$8.3
V - Dissolution	25%	1.0	\$0.1	\$0.03
Time to liquidity (a)		2.6		
Time to successful exit (b)		3.1		

Notes:

- (a) Includes all successful exit and dissolution timing and probabilities.
(b) Excludes dissolution timing and probability.

¹⁰ Note that it would typically not be appropriate to select a different discount rate for each event scenario because investors cannot choose among these outcomes. Instead, the specialist should select a discount rate for each share class appropriate to the risks inherent in the probability-weighted cash flows to this class. See paragraph 6.24.

I.26 Management believed the Company would need to raise \$20 million in Series C financing in order to reach a sale or an IPO exit.¹¹ Based on discussions with their investors, management indicated that the Company would be likely to succeed in raising the Series C at a price of \$1.75 per share, with similar terms to the Series B, if the Company meets certain milestones. If the Company does not succeed in raising this investment, management estimated that the Company will be dissolved in one year. Including the Series C financing, the number of each class of stock, on a fully diluted basis, as of the expected IPO or sale is shown in table I-5, "Classes of Equity and Preferred Liquidation Preferences."

Table I-5**Classes of Equity and Preferred Liquidation Preferences**

Class of Equity	Number of Shares Outstanding	Liquidation Preference per Share	Aggregate Liquidation Preference
Common Stock	11,250,000	n/a	n/a
Series A Convertible Preferred Stock	7,500,000	\$1.00	\$7,500,000
Series B Convertible Preferred Stock	10,000,000	\$1.50	15,000,000
Series C Convertible Preferred Stock	11,500,000	\$1.75	20,125,000
Total	40,250,000		\$42,625,000

I.27 Table I-6, "PWERM Allocation of Total Equity Values," illustrates the allocation of the estimated liquidity date equity value to the different classes of stock outstanding. The following should be noted:

- In the IPO scenario, all classes of preferred stock are automatically converted into common stock, and the aggregate enterprise value is allocated on a pro rata basis.
- In the sale-high scenario and sale-mid scenario, it is advantageous for the holders of the preferred stock to forgo their liquidation preference and convert to common.
- In the sale-low scenario, it is advantageous for the holders of the Series A preferred stock to forgo their liquidation preference and convert to common, whereas it is beneficial for the holders of the Series B and Series C preferred stock to receive their liquidation preference.

¹¹ In order to illustrate the application of the probability-weighted expected return method (PWERM) for this situation, this example assumes that management has good insight into the likely pricing and terms for the Series C financing. Note, however, that, typically, the PWERM is used when the company is close to exit and does not plan on raising additional capital; if additional financing is needed, an alternative method may be more appropriate. See paragraph 6.25.

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- In the dissolution scenario, only the preferred stock receives any value. Because the Series A and Series B are pari passu, they share in this value. However, because the Company has no significant assets except for the intellectual property the Company is developing, and management expects it will be successful in raising the Series C financing unless the technology fails, management estimated that the value in the dissolution scenario is de minimus.

Table I-6

PWERM Allocation of Total Equity Values

Major Assumptions (US\$ in 000s, except per share amounts)

	Liquidity Event Scenario				
	I - IPO	II - Sale/High	III - Sale/Mid	IV - Sale/Low	V - Dissolution
Expected Enterprise Value at Liquidity	\$250.000	\$170.000	\$135.000	\$55.000	\$0.100
Less: Series A Preferred Stock Liquidation Preference	0.000	0.000	0.000	0.000	0.033
Less: Series B Preferred Stock Liquidation Preference	0.000	0.000	0.000	15.000	0.067
Less: Series C Preferred Stock Liquidation Preference	0.000	0.000	0.000	20.125	0.000
Remaining Enterprise Value after Distribution of Liquidation Preferences	\$250.000	\$170.000	\$135.000	\$19.875	\$0.000

Enterprise Value Allocable to Common Stock and Common Stock Equivalents After Distribution of Liquidation Preferences

Common Stock Outstanding as of the Valuation Date	\$69.876	\$47.516	\$37.733	\$11.925	\$0.000
Converted Series A Preferred Stock	\$46.584	\$31.677	\$25.155	\$7.950	\$0.000
Converted Series B Preferred Stock	\$62.112	\$42.236	\$33.540	\$0.000	\$0.000
Converted Series C Preferred Stock	\$71.429	\$48.571	\$38.571	\$0.000	\$0.000

Aggregate Value Allocable to Each Class of Stock

Common Stock	\$69.876	\$47.516	\$37.733	\$11.925	\$0.000
Series A Participating Preferred	\$46.584	\$31.677	\$25.155	\$7.950	\$0.033
Series B Convertible Preferred	\$62.112	\$42.236	\$33.540	\$15.000	\$0.067
Series C Convertible Preferred	\$71.429	\$48.571	\$38.571	\$20.125	\$0.000

Per Share Value Allocable to Each Class of Stock

Common Stock	\$6.21	\$4.22	\$3.35	\$1.06	\$0.00
Series A Participating Preferred	\$6.21	\$4.22	\$3.35	\$1.06	\$0.00
Series B Convertible Preferred	\$6.21	\$4.22	\$3.35	\$1.50	\$0.01
Series C Convertible Preferred	\$6.21	\$4.22	\$3.35	\$1.75	\$0.00

I.28 The present value of the amounts allocable to each class of stock outstanding as of the June 30, 2X10, valuation date are illustrated in table I-7, "Present Value of Equity Allocated to Common Stock in PWERM;" table I-8, "Present Value of Equity Allocated to Series A in PWERM;" and table I-9, "Present Value of Equity Allocated to Series B in PWERM." Based on a discount rate of 40 percent for the common stock and 20 percent for the Series A preferred and Series B preferred stock, the probability-weighted per-share value of the Company's common stock, Series A convertible preferred stock, and Series B convertible preferred stock equal \$0.54, \$1.46, and \$1.50, respectively.

Table I-7**Present Value of Equity Allocated to Common Stock in PWERM****Major Assumptions (US\$ in 000s, except per share amounts)**

Scenario	Probability	1.0 Year	2.0 Years	3.0 Years	4.0 Years	
I - IPO	10%					\$69.876
II - Sale/High	20%			\$47.516		
III - Sale/Mid	30%			\$37.733		
IV - Sale/Low	15%			\$11.925		
VI - Dissolution	25%	\$0.000				
Probability Weighted Cash Flows:		\$0.000	\$0.000	\$22.612	\$6.988	
Present Value Factor Using a 40% Discount Rate		0.7143	0.5102	0.3644	0.2603	
Present Value of Expected Cash Flows		\$0.000	\$0.000	\$8.240	\$1.819	
Total Present Value of Probability Weighted Cash Flows					\$10.059	
Number of Common Shares Outstanding as of the Valuation Date					11,250,000	
Common Stock Value per share (pre-DLOM)					\$0.89	\$0.89
Less: 30%–42% DLOM (a)					(0.27)	(0.38)
Common Stock Value per share (non-marketable basis)					<u>\$0.62</u>	<u>\$0.52</u>

Notes:

- (a) DLOM based on the Finnerty (2012) and Asian protective put methods: 3.1-year term (time to successful exit), 107% common equity volatility, and 2.9% risk-free rate corresponding to the 3.1-year term. Note that these methods are not the only appropriate methods for estimating a DLOM; please see footnote 6 in paragraph I.14.

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Table I-8

Present Value of Equity Allocated to Series A in PWERM

Major Assumptions (US\$ in 000s, except per share amounts)

Scenario	Probability	1.0 Year	2.0 Years	3.0 Years	4.0 Years
I - IPO	10%				\$46.584
II - Sale/High	20%			\$31.677	
III - Sale/Mid	30%			\$25.155	
IV - Sale/Low	15%			\$7.950	
VI - Dissolution	25%	\$0.033			
Probability Weighted Cash Flows:		\$0.008	\$0.000	\$15.074	\$4.658
Present Value Factor Using a 20% Discount Rate		0.8333	0.6944	0.5787	0.4823
Present Value of Expected Cash Flows		\$0.007	\$0.000	\$8.724	\$2.247
Total Present Value of Probability Weighted Cash Flows				\$10.977	
Number of Series A Shares Outstanding as of the Valuation Date				7,500,000	
Estimated Fair Value of Series A Preferred Stock				\$1.46	

Table I-9

Present Value of Equity Allocated to Series B in PWERM

Major Assumptions (US\$ in 000s, except per share amounts)

Scenario	Probability	1.0 Year	2.0 Years	3.0 Years	4.0 Years
I - IPO	10%				\$62.112
II - Sale/High	20%			\$42.236	
III - Sale/Mid	30%			\$33.540	
IV - Sale/Low	15%			\$15.000	
VI - Dissolution	25%	\$0.067			
Probability Weighted Cash Flows:		\$0.017	\$0.000	\$20.759	\$6.211
Present Value Factor Using a 20% Discount Rate		0.8333	0.6944	0.5787	0.4823
Present Value of Expected Cash Flows		\$0.014	\$0.000	\$12.013	\$2.995
Total Present Value of Probability Weighted Cash Flows				\$15.023	
Number of Series B Shares Outstanding as of the Valuation Date				10,000,000	
Estimated Fair Value of Series B Preferred Stock				\$1.50	

I.29 Note that the aggregate estimated fair value allocable to the Series B convertible preferred stock of \$15.023 million is consistent with the \$15 million transaction value of the Series B preferred stock.

I.30 The estimated total equity value developed using the PWERM should be consistent with the total equity value estimate developed using the OPM. Table I-10, "Total Present Value of Equity," illustrates the probability-weighted present value of the cash flows distributable to each class of stock outstanding as of the valuation date (taken from tables I-7, I-8, and I-9). The total estimated value of \$36.059 million is consistent with the \$36.437 million value estimate illustrated in table I-3.

Table I-10

Total Present Value of Equity

Major Assumptions (US\$ in 000s, except per share amounts)

Probability Weighted Present Value of Cash Flows Distributable to Each Class of Stock	1.0 Year	2.0 Years	3.0 Years	4.0 Years	Total
Common	\$0.000	\$0.000	\$8.240	\$1.819	\$10.059
Series A Preferred	\$0.009	\$0.000	\$8.724	\$2.247	\$10.979
Series B Preferred	\$0.012	\$0.000	\$12.013	\$2.995	\$15.021
Total					\$36.059

December 31, 2X10, Valuation

I.31 In the fourth quarter of 2X10, the economy suffered a significant decline, and the Company felt it was appropriate to reassess the value of the common stock. The Company estimated that by June 30, 2X11, it would require approximately \$20.1 million in Series C financing (11.5 million Series C shares at \$1.75 per share). The Series C would be senior to the Series A and Series B shares. Given the status of the capital markets and management's preliminary discussions with investors, management estimated there is only a 60 percent chance that the Company would be able to raise the necessary capital. If the Company is unable to raise a Series C preferred round within 6 months, it faces dissolution.

I.32 The Company again retained the services of the Firm to estimate the fair value of its common stock as of December 31, 2X10.

Hybrid Method: December 31, 2X10

I.33 Because the Company is in discussions with investors and expects to raise a new financing round, the Company's expectations about the new round should be considered in the value allocation method selected. However, if the financing does not occur, the Company will face dissolution. Under these circumstances, a hybrid method may be appropriate. In particular, it is possible to apply the backsolve method using the OPM to solve for the equity value and corresponding value of common stock corresponding to the \$1.75 per share Series C price for the new financing round, assuming this round occurs. This

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success scenario common stock value would then be weighted by the probability of closing the Series C financing and finally discounted at a risk-adjusted discount rate for six months to estimate the value of the common stock as of the valuation date. See paragraphs 6.48–.54 for additional detail and examples related to hybrid methods. Table I-11, "Hybrid Method Assumptions and Allocation of Total Equity Values," summarizes the hybrid method assumptions and resulting allocation as of December 31, 2X10:

Table I-11

Hybrid Method Assumptions and Allocation of Total Equity Values (assuming future transaction as of 6/30/2X11 or dissolution by 6/30/2X11)

Major Assumptions (US\$ in 000s, except per share amounts)

Valuation date	12/31/2X10
Transaction date (a)	6/30/2X11
Liquidity event date	6/30/2X14
Time until liquidity event (years) (b)	3.0
Total equity value (c)	\$51,043
Annual dividend rate for common stock	0.0%
Volatility (σ) (d)	85.0%
Risk-free rate (r) (e)	1.00%

Allocation of Total Equity Values

Event	Strike Price	Call Option Value	Incremental Call Option Value	Series A	Series B	Series C	Common Stock	Total
Series C reach their liquidation preference	\$0	\$51,043	\$13,325	0.0%	0.0%	100.0%	0.0%	100.0%
Series A, Series B reach their liquidation preference	\$20,125	\$37,718	\$7,797	33.3%	66.7%	0.0%	0.0%	100.0%
Common begins participating	\$42,625	\$29,921	\$2,725	0.0%	0.0%	0.0%	100.0%	100.0%
Series A converts	\$53,875	\$27,195	\$1,907	40.0%	0.0%	0.0%	60.0%	100.0%
Series B converts	\$63,250	\$25,288	\$1,287	26.1%	34.8%	0.0%	39.1%	100.0%

Hybrid Method Assumptions and Allocation of Total Equity Values—continued

Series C converts	\$70,438	\$24,001	\$24,001	18.6%	24.8%	28.6%	28.0%	100.0%
			\$51,043	\$8,170	\$11,609	\$20,182	\$11,083	
			Number of shares	7,500,000	10,000,000	11,500,000	11,250,000	
			Value per share in 6 months (pre-DLOM)	\$1.09	\$1.16	\$1.75	\$0.99	\$0.99
			Present value factor @ 20% for the preferred stock and 30% for the common stock (f)	0.9129	0.9129		0.8771	0.8771
			Value per share (pre-DLOM)	\$0.99	\$1.06		\$0.86	\$0.86
			less: 31%–48% DLOM (g)				(\$0.27)	(\$0.41)
			Value per share—Backsolve Method	\$0.99	\$1.06		\$0.60	\$0.45
			Prob. of C round = Yes (h)	60.0%	\$0.99	\$1.06	\$0.60	\$0.45
			Prob. of C round = No (h, i)	40.0%	\$0.06	\$0.09	0.00	0.00
			Value per share (j)	<u>\$0.62</u>	<u>\$0.67</u>		<u>\$0.36</u>	<u>\$0.27</u>

Notes:

- (a) Transaction date of 6/30/2X11, assuming transaction closes. Results from the OPM discounted by 6 months to take into account the difference.
- (b) Time to liquidity based on time to exit, including the dissolution timing and probability.
- (c) Total equity value consistent with the cash flows under current ownership and the required rate of return of the investors who in aggregate have control of the business.
- (d) Volatility estimated based on the historical equity volatility of comparable firms.
- (e) Yield on a US treasury security with a maturity of 3 years, corresponding to the time to exit as described in note (a).
- (f) Present value factor based on a risk-adjusted preferred stock discount rate of 20% and common stock discount rate of 30% over 6 months.
- (g) DLOM for common stock based on the Finnerty (2012) and Asian protective put methods: 3.5-year term (time to successful exit), 107.1% common equity volatility, and 1.0% risk-free rate corresponding to the 3.5 year term. Note that these methods are not the only appropriate methods for estimating a DLOM; please see footnote 6 in paragraph I.14.
- (h) Based on Management's estimate.
- (i) Residual allocation to preferred in the "No Financing" scenario based on expected liquidation value of the Company of \$1.5m, discounted at risk-adjusted preferred stock discount rate of 20% over 6 months. The present value of \$1.5 million is \$1,369,350, which is allocated to the Series A and Series B based on their proportions of aggregate liquidation preference (1/3 for Series A and 2/3 for Series B). For Series A, the resulting amount of \$456,450 is divided by 7,500,000 shares; for Series B, the resulting amount of \$912,900 is divided by 10,000,000 shares.
- (j) Value per share as of the Valuation Date not reported for Series C financing, since Series C financing is expected to close in 6 months.

The PWERM: December 31, 2X10

I.34 As of the December 31, 2X10, valuation date, the Specialist also considered the PWERM. Refer to paragraphs I.21–I.30 and tables I-4–I-10 for an example showing the use of the PWERM.

I.35 Using the PWERM, the Specialist estimated a 5 percent probability of IPO at a value of \$210 million in 4 years; a 55 percent probability of a sale in 3.3 to 3.6 years at a value of \$40 million, \$120 million, or \$200 million (25 percent low value in 3.3 years and 20 percent medium or 10 percent high value in 3.6 years); and a 40 percent probability that the Company will not obtain the

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Series C financing and will face dissolution in 6 months at a de minimus value. The Specialist then allocated these future values to the Series C (omitting the dissolution scenario), Series B, and Series A preferred stock and the common stock and weighted across the scenarios to estimate the expected cash flows to each class of equity. Finally, the Specialist discounted the values of each set of cash flows at an appropriate risk-adjusted rate. The Specialist used a discount rate of 16 percent for the Series C preferred stock, reconciling to the price paid in the transaction, a discount rate of 20 percent for the Series A and Series B preferred stock because the Series C is senior, and a discount rate of 30 percent for the common stock, taking into account the higher risk of the common stock. Based on this analysis, the Specialist estimated a common stock value of \$0.52 per share prior to the application of any discount for lack of marketability (DLOM). After developing discounts for lack of marketability of 31 percent to 48 percent using the Finnerty and Asian protective put methods (see note [g] in table I-11), the estimated fair value of a share of the Company's common stock on a nonmarketable interest basis equaled \$0.27 to \$0.36.

June 30, 2X11, Valuation

I.36 On June 30, 2X11, the Company succeeded in raising approximately \$20.1 million in Series C financing (11.5 million Series C shares at \$1.75 per share), as management had hoped. However, the new Series C investors were able to negotiate better terms than management had anticipated. In addition to its seniority over the Series A preferred, the Series C preferred shares included participation rights. Participation rights imply that upon a sale of the Company, the Series C shareholders not only would be entitled to receive their liquidation preference but also would participate in any further upside on an as-converted basis. The Series B investors, who could have blocked the new round, agreed to the Series C terms upon the condition that the Series B shares also receive participation rights (in addition to being *pari passu* with the Series C shares). The Series A terms remained unchanged. Upon a qualified IPO, all preferred stock is required to convert into common stock, forgoing its liquidation preference.

The PWERM: June 30, 2X11

I.37 With the capital raised in the Series C round, management believed that the Company would be able to complete the development of its technology, expand its customer base, and reach break-even profitability without raising additional funds. Therefore, the PWERM may be an appropriate method as of June 30, 2X11. Refer to paragraphs I.21–I.30 and tables I-4–I-10 for an example showing the use of the PWERM.

I.38 Using the PWERM, the Specialist estimated a 10 percent probability of IPO at a value of \$285 million in four years; a 60 percent probability of a sale in three years at a value of \$50 million, \$120 million, or \$190 million (30 percent low, 20 percent medium, or 10 percent high value); and a 30 percent probability of a sale of assets in one year at a value of \$10 million. The Specialist then allocated these future values to the Series C, Series B, and Series A preferred stock and the common stock and weighted across the scenarios to estimate the expected cash flows to each class of equity. Finally, the Specialist discounted the values of each set of cash flows at an appropriate risk-adjusted rate. The Specialist used a discount rate of 16 percent for the Series C and Series B

preferred stock, reconciling to the price for the Series C paid in the transaction, a discount rate of 20 percent for the Series A stock because the Series C is senior, and a discount rate of 30 percent for the common stock, taking into account the higher risk of the common stock. Based on this analysis, the Specialist estimated a common stock value of \$0.65 per share prior to the application of any DLOM. After developing discounts for lack of marketability of 31 percent to 47 percent using the Finnerty and Asian protective put methods (see note [f] in table I-12, "OPM With Digital Option Assumptions and Allocation of Total Equity Values"), the estimated fair value of a share of the Company's common stock on a nonmarketable interest basis equaled \$0.34 to \$0.45.

Hybrid Method: June 30, 2X11

I.39 Given the forced conversion in the IPO scenario, if an IPO is a possible exit strategy, a basic OPM is not an appropriate method for valuing the equity securities in a capital structure that includes fully participating preferred shares.¹² However, if management is able to estimate the likelihood of IPO and the prospective IPO value, a hybrid method may be appropriate. Refer to paragraph I.33 and table I-11 for an example showing the use of a hybrid method.

I.40 Using a hybrid method, the Specialist estimated a 10 percent probability of IPO at a value of \$285 million in four years. Because the preferred stock must convert upon a qualified IPO, the future value of both the Series C preferred stock and the common stock in this scenario is \$7.08 per share. Discounting at the 16 percent risk-adjusted rate for the Series C preferred stock and the 30 percent risk-adjusted rate for the common stock resulted in an estimated value of \$3.91 per share for the Series C preferred stock and \$2.48 per share for the common stock in the IPO scenario.

I.41 To match the Series C preferred stock transaction price of \$1.75 per share, the implied value of the Series C preferred stock in the non-IPO scenario must satisfy the following:

$$(90\% \times V + 10\% \times \$3.91) = \$1.75$$

or

$$V = (\$1.75 - 10\% \times \$3.91) / 90\% = \$1.51.$$

Using the backsolve method with the OPM to solve for the equity value based on an implied Series C value of \$1.51 per share and corresponding value of common stock matching this total equity value, the Specialist estimated a value of \$0.31 to \$0.42 per share for the common stock (including a 31 percent to 49 percent DLOM based on the Finnerty and Asian protective put methods: 2.5-year term, 127.9 percent common equity volatility, and 1.4 percent risk-free rate corresponding to the 2.5-year term).

I.42 Finally, the Specialist calculated the probability-weighted-average between the IPO scenario and non-IPO scenario, obtaining an estimated fair value for the common stock of \$0.53 to \$0.63 per share.

¹² In the option pricing method (OPM) model, it will never be optimal for fully participating preferred shares (without a cap) to convert. Therefore, the basic OPM model does not capture the impact of forced conversion in the IPO scenario and, therefore, understates the value of the common stock in this situation.

The OPM With Digital Option: June 30, 2X11

I.43 If management is uncertain about the probability of successfully completing an IPO or the value upon an IPO, an OPM using a digital option to capture the impact of the forced conversion at an IPO may be appropriate. A *digital option* is an option that has a fixed value whenever the equity value exceeds a specified threshold. To use this method, management needs to estimate the probability that they will aim for IPO (that is, the probability that they will do an IPO in preference to a sale if the value is high enough to support it). Management stated it did not have a preference between an IPO and a sale; therefore, the Specialist used a probability of 50 percent for each.

I.44 In the aim-for-IPO scenario, one of the OPM breakpoints is a digital option for forced conversion at the \$250 million IPO threshold. In this case, the digital option is used to reallocate the liquidation preferences that the Series B and C preferred stock give up by converting to common stock; specifically, a pro rata share of the total liquidation preferences is allocated to all the classes of equity on an as-converted basis. (See note [e] in table I-12 for additional detail.)

I.45 In the sale scenario, the OPM is modeled in the usual fashion.

I.46 The Series C value equals the probability-weighted average between the two scenarios. Thus, it is possible to use the backsolve method with the two scenarios to solve for the equity value and corresponding value of common stock matching this value. Table I-12 summarizes the OPM with digital option and allocation as of June 30, 2X11:

Table I-12
OPM With Digital Option Assumptions and Allocation of Total Equity Values

Major Assumptions (US\$ in 000s, except per share amounts)		Allocation of Total Equity Values—Aim for IPO Scenario							
Valuation date	6/30/2X11	Call Option Value	Strike Price	Call Incremental Value	Series A	Series B	Series C	Common Stock	Total
Liquidity event date	12/31/2X13	\$0	\$0	\$19,653	0.0%	42.7%	57.3%	0.0%	100.0%
Time until liquidity event (years) (a)	2.5	\$32,313	\$35,125	\$2,282	100.0%	0.0%	0.0%	0.0%	100.0%
Total equity value (b)	\$51,966	\$30,031	\$42,625	\$7,054	0.0%	30.5%	35.1%	34.4%	100.0%
Annual dividend rate for common stock	0.0%	\$22,976	\$75,375	\$22,976	18.6%	24.8%	28.6%	28.0%	100.0%
Volatility (σ) (c)	90.0%								
Risk-free rate (r) (d)	1.38%								
Event									
Series B, Series C reach their liquidation preference									
Series A reach their liquidation preference									
Common begins participating									
Series A converts									

OPM With Digital Option Assumptions and Allocation of Total Equity Values—continued

	Digital Option Value	Series A	Series B	Series C	Common Stock	Total
Forced conversion (digital option) (e)	\$250,000	0.0%	-42.7%	-57.3%	0.0%	-100.0%
Reallocation of forced conversion	\$250,000	18.6%	24.8%	28.6%	28.0%	100.0%
	\$51,966	\$6,795	\$16,033	\$19,945	\$9,193	
	Number of shares	7,500,000	10,000,000	11,500,000	11,250,000	
	Value per share (pre-DLOM)	\$0.91	\$1.60	\$1.73	\$0.82	\$0.82
	less: 31%—47% DLOM (f)				(\$0.25)	(\$0.38)
	Value per share (non-marketable basis)				\$0.55	\$0.43

Digital Option Calculations (e)

IPO Value	Time to IPO	Total Equity Value	Volatility	Risk-free Rate	d2	Digital Option Value
\$250,000	2.5 years	\$51,966	90.0%	1.4%	(1.79)	\$1,243
Assumptions and Calculations						

Allocation of Total Equity Values—Sale Scenario

Event	Strike Price	Call Option Value	Incremental Call Option Value	Series A	Series B	Series C	Common Stock	Total
Series C reach their liquidation preference	\$0	\$51,966	\$19,653	0.0%	42.7%	57.3%	0.0%	100.0%
Series A, Series B reach their liquidation preference	\$35,125	\$32,313	\$2,282	100.0%	0.0%	0.0%	0.0%	100.0%
Common begins participating	\$42,625	\$30,031	\$7,054	0.0%	30.5%	35.1%	34.4%	100.0%
Series A converts	\$75,375	\$22,976	\$22,976	18.6%	24.8%	28.6%	28.0%	100.0%
		\$51,966		\$6,564	\$16,255	\$20,302	\$8,845	
		Number of shares	7,500,000	10,000,000	11,500,000	11,250,000		
		Value per share (pre-DLOM)		\$0.88	\$1.63	\$1.77	\$0.79	\$0.79
		less: 31%–47% DLOM (f)					(\$0.24)	(\$0.37)
		Value per share (non-marketable basis)					\$0.54	\$0.42
					Average Series C value	\$1.75		
					Common stock value per share (non-marketable basis)		\$0.54	\$0.42

Notes:

- (a) Time to liquidity based on time to exit, including the dissolution timing and probability.
- (b) Total equity value consistent with the cash flows under current ownership and the required rate of return of the investors who in aggregate have control of the business.
- (c) Volatility estimated based on the historical equity volatility of comparable firms.
- (d) Yield on a US treasury security with a maturity of 2.5 years, corresponding to the time to exit as described in note (a).
- (e) Digital option calculated using a digital option formula considering the \$250 million breakpoint based on forced IPO conversion price, the \$35.125 million in forfeited liquidation preference for the Series B and C investors, 2.5-year term (time to IPO), 90% volatility, and 1.4% risk-free rate corresponding to the 2.5-year term. The value for d2 of -1.79 is derived from the Black-Scholes model based on a stock price (equity value) of \$51.966 million, a strike price (IPO value) of \$250 million, time of 2.5 years, volatility of 90%, and risk-free rate of 1.38%. The Digital Option Value is equal to $\$35.125 * \exp(-rT) * N(d2)$.
- (f) DLOM based on the Finnerty (2012) and Asian protective put methods: 2.5-year term (time to successful exit), 123.9% common equity volatility, and 1.4% risk-free rate corresponding to the 2.5-year term. Note that since the Company has now completed all the financing needed to fund operations through breakeven, the time to successful exit is the same as the expected time to liquidity. Also note that these methods are not the only appropriate methods for estimating a DLOM; please see footnote 6 in paragraph I.14.

Example 2: Private Equity-Backed Leveraged Buyout

I.47 Doggo Corporation (Doggo or the Company) is a large manufacturer of industrial machinery.¹³ The Company was founded in 19X4 and was a privately held family business until the retirement of its founder, Herman T. Doggo. The Company is structured as a limited liability company.

June 30, 2X09, Valuation

I.48 On June 30, 2X09, Doggo was acquired by a private equity (PE) firm in leveraged buyout for \$1.2 billion. Doggo had last 12 months (LTM) earnings before interest, taxes, depreciation, and amortization (EBITDA) of \$150 million, thus implying an 8 times EBITDA multiple.

I.49 The acquisition was financed with 80 percent debt, or \$960 million, including \$600 million of 5-year senior debt and \$360 million in 5.5-year mezzanine debt. Given the credit environment at the time, both debt issuances were considered to be covenant-light. The senior debt carried a 6 percent coupon with 30-year amortization and a 5-year balloon. The mezzanine debt carried a 14 percent fixed paid-in-kind (PIK) coupon.

I.50 The PE firm carried the remaining \$240 million of the purchase price in equity, consisting of 240,000 Class A units with an original issuance price and a liquidation preference of \$1,000 per unit. The Class A units are fully participating membership units, convertible 1:1, with cumulative annual dividends at 8 percent. As part of the transaction, the Company issued 30,000 Class B units to Doggo management. The Class B units are profits interests that participate in any increase in value after the Class A members receive a return of their invested capital plus the 8 percent cumulative dividends.

I.51 Doggo retained the services of the Firm to estimate the fair value of the Class B units as of June 30, 2X09.¹⁴

The OPM—Equity Backsolve: June 30, 2X09

I.52 The Specialist used the backsolve method to solve for the implied total equity value and corresponding Class B unit value that is consistent with the transaction price for the Class A units at \$1,000 per share.

I.53 Because the Company was highly levered, the Specialist estimated the volatility based on a set of large public industrial machinery manufacturers, adjusting for leverage. First, the Specialist calculated the historical equity volatilities over a five-year period, corresponding to the investors' estimated time to a liquidity event. Next, the Specialist estimated the asset volatilities for these companies by delevering the equity volatilities, as described in paragraph 6.36*b*. Because the Specialist selected a set of comparable companies that are similar (business description, size, level of diversification, markets, and so on) to Doggo, the Specialist selected an asset volatility for Doggo based on the median asset volatility of the comparables. Finally, the Specialist estimated the equity volatility for the Company by relevering using the Company's debt and equity structure. Table I-13, "Relevering Volatility," shows this process:

¹³ Fictitious company for illustration purposes.

¹⁴ Note that in a limited liability company structure, profits interests that share only in the increase in value of the company have a fair market value for tax purposes based on their intrinsic value (\$0). Profits interests are thus equivalent to options in a Subchapter C corporation.

Table I-13

Relevering Volatility

Volatility Analysis

(US\$ in millions, except per share amounts)

Company	Market Capitalization	Total Debt	Total Invested Capital	5.0 Year Annualized Daily Historical Equity Volatility	Book Value Implied Asset Volatility	Equity Implied Asset Volatility			
						d1	d2	Asset Value (a)	Asset Volatility
Guideline company 1	\$1,234	\$310	\$1,544	26.8%	21.4%	3.87	3.37	\$1,475	22.4%
Guideline company 2	693	415	1,108	46.8%	29.2%	1.90	1.16	1,005	33.2%
Guideline company 3	1,151	187	1,338	31.9%	27.4%	3.77	3.14	1,296	28.3%
Guideline company 4	1,264	411	1,675	27.1%	20.5%	3.55	3.06	1,583	21.6%
Guideline company 5	811	799	1,610	27.6%	13.9%	2.55	2.19	1,431	15.8%
Guideline company 6	1,000	222	1,222	38.7%	31.7%	2.96	2.22	1,172	33.1%
Guideline company 7	1,200	325	1,525	50.0%	39.3%	2.33	1.39	1,446	41.9%
Guideline company 8	300	994	1,294	38.3%	8.9%	1.31	1.04	1,058	12.0%
			Mean	35.9%	24.0%			Mean	26.0%
			Median	35.1%	24.4%			Median	25.4%
						Selected Asset Volatility			25.0%
Company	Equity Value	Total Debt	Total Invested Capital		Selected Asset Volatility	d1	d2	Asset Value (a)	Relevered Equity Volatility
Doggo Corp.	\$240	\$960	\$1,200		25.0%	0.54	-0.02	861	63.1%
						Calculated Equity Volatility			63.0%

Notes:

(a) The low asset value is an artifact of the iterative approach for relevering, where the book value of debt is treated as a strike price.

I.54 Given this volatility, table I-14, "OPM Assumptions and Allocation of Total Equity Values," summarizes the OPM allocation as of June 30, 2X09. Note that the total equity value consistent with the investment is approximately \$254 million, higher than the aggregate \$240 million paid for the Class A units in the transaction. Because the private equity investor paid \$1,000 per unit with full knowledge that the profits interests would be issued, the value of these profits interests should be treated as incremental to the \$1,000 per unit price rather than dilutive. It is not reasonable to assume that the investors took a day one loss due to the issuance of the management interests.

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I.55 To estimate the DLOM applicable to the profits interests, the Specialist considered not only the leverage imposed by the debt on the total equity but also the leverage imposed by the preferred stock on the profits interests. Table I-15, "Series Volatility," summarizes the volatility for each class of equity. See paragraph 7.32 for a description of this methodology.

Table I-14

OPM Assumptions and Allocation of Total Equity Values

Major Assumptions (US\$ in 000s, except per share amounts)

Valuation date	6/30/2X09
Liquidity event date	6/28/2X14
Time until liquidity event (years)	5.0
Total equity value (a)	\$254,133
Annual dividend rate for common stock	0.0%
Volatility (σ) (b)	63.0%
Risk-free rate (r) (c)	5.1%

Allocation of Total Equity Values

Event	Strike Price	Call Option Value	Incremental Call Option Value	Class A Units	Profits Interests	Total
Class A Units reach their liquidation preference	\$0	\$254,133	\$126,937	100.0%	0.0%	100.0%
Profits Interests begin participating	\$352,639	\$127,196	\$127,196	88.9%	11.1%	100.0%
			\$254,133	\$240,000	\$14,133	
			Number of shares	240,000	30,000	
			Value per share (pre-DLOM)	\$1,000.00	\$471.10	\$471.10
			less: 31%–51% DLOM (d)		(\$147.30)	(\$240.26)
			Value per share (non-marketable basis)		<u>\$323.80</u>	<u>\$230.84</u>

Notes:

- Total equity value consistent with the cash flows under current ownership and the required rate of return of the investors who in aggregate have control of the business.
- Volatility estimated based on the historical equity volatility of comparable firms.
- Yield on a US treasury security with a maturity of 5.0 years.
- DLOM based on the Finnerty (2012) and Asian protective put methods: 5-year term, 93.4% volatility for the profits interests, and a 5.1% risk-free rate. Note that these methods are not the only appropriate methods for estimating a DLOM; please see footnote 6 in paragraph I.14.

Table I-15

Series Volatility

Major Assumptions (US\$ in 000s, except per share amounts)

Valuation date	6/30/2X09
Liquidity event date	6/28/2X14
Time until liquidity event (years)	5.0
Total equity value (a)	\$254,133
Annual dividend rate for common stock	0.0%
Volatility (σ)	63.0%
Risk-free rate (r)	5.1%

Allocation of Total Equity Values

Event	Strike Price	N(d1)	Incremental N(d1) Value	Incremental Call Option Value	Class A Units	Profits Interests
Class A Units reach their liquidation preference	\$0	1.0000	0.2577	\$126,937	100.0%	0.0%
Profits Interests begins participating	\$352,639	0.7423	0.7423	127,196	88.9%	11.1%
			Weighted N(d1) Value by Series		0.9175	0.0825
			Aggregate Series Value		\$240,000	\$14,133
			Volatility by Series of Equity (b)		61.2%	93.4%

Notes:

- (a) Total equity value consistent with the cash flows under current ownership and the required rate of return of the investors who in aggregate have control of the business.
- (b) Per Merton's model, Equity Volatility = Asset Volatility * (Asset Value * N(d1))/Equity Value. Therefore, to estimate the volatility for each series of equity, we have:

$$\text{Series Volatility} = \text{Aggregate Volatility} * (\text{Aggregate Value} * \text{Series N(d1)}) / \text{Series Value, where} \\ \text{Series N(d1)} = \text{Sum (Incremental N(d1) Value by Breakpoint} * \text{Series Allocation by Breakpoint)}$$

See Neil J. Beaton, Stilian Ghaidarov, and William Brigida, "Option Pricing Model." Valuation Strategies. (November–December 2009).

Alternative Methods: June 30, 2X09

I.56 Because the Class B units are profits interests that act as options on the Class A units, it would also be appropriate to estimate the fair value of a Class B unit as an option¹⁵ with a \$1,000 stock price, \$1,469 strike price

¹⁵ As illustrated here, this method assumes that the Class A and Class B units each participate 1:1 after the Class A units receive their liquidation preference plus accumulated dividends. If the conversion ratio for the Class A units increases with dividends, then the Class B units will have less value.

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(assuming 5 years of cumulative dividends at 8 percent), and volatility and risk-free rate as shown in tables I-13 and I-14. This method resulted in an estimated value of \$487 on a pre-DLOM basis, or an estimated fair value of \$239 to \$336 after applying a 31 percent to 51 percent DLOM.

I.57 Because the Class B units are profits interests that act as options on the Class A units, it would generally not be appropriate to use the PWERM to estimate the fair value of a Class B unit. See paragraph 6.28.

December 31, 2X10, Valuation

The OPM—Equity Allocation: December 31, 2X10

I.58 By December 31, 2X10, 1.5 years following the transaction, Doggo's LTM EBITDA had fallen significantly. In addition, given the overall market conditions, market multiples for the comparables had fallen. The Company's board of directors was not satisfied with this performance, and it voted to replace the CEO and chief operating officer, issuing Class B units to the new executives. In connection with the new grant, the Company retained the services of the Firm to estimate the fair value of the Class B units as of December 31, 2X10.

I.59 The Specialist estimated the total enterprise value of the Company to be approximately \$775 million based on a discounted cash flow (DCF) method, which yielded an estimated total enterprise value of \$790 million, and the guideline public company method based on an EBITDA multiple of 6 that yielded an estimated total enterprise value of \$760 million. (DCF and the guideline public company methods were weighted equally.) This enterprise value reflects the value of the enterprise under current ownership through the expected liquidity event.¹⁶

I.60 The total book value of the Company's debt as of December 31, 2X10, was \$1.027 billion, including \$588.7 million for the senior debt (\$600 million less 1.5 years of amortization on a 30-year amortization schedule) and \$438.2 million for the mezzanine debt (\$360 million plus 1.5 years of PIK interest at 14 percent). The Specialist estimated the market yield for the debt, considering the Company's B corporate family rating, indicating a B rating with an 18 percent yield for the senior debt and a CCC rating with a 30 percent yield for the junior debt. The Specialist then used a DCF analysis to estimate the fair value of the senior debt at \$411.9 million, or approximately 70 percent of par, and the fair value of the mezzanine debt at \$259.1 million, or approximately 59 percent of par. Finally, the Specialist estimated the total equity value by subtracting the fair value of debt from the total enterprise value, concluding on a total equity value of \$104 million.

I.61 As in the original analysis, the Specialist used a leveraged volatility. Given the higher market volatilities in the second half of 2X10, as well as the Company's increased leverage, the estimated volatility increased significantly compared to the June 30, 2X09, analysis. Table I-16, "OPM Assumptions and

¹⁶ In this example, the decline in enterprise value from the original purchase of an 8 times the last 12 months (LTM) earnings before interest, taxes, depreciation, and amortization (EBITDA) to 6 times LTM EBITDA is partially attributable to the overall market decline and partially attributable to the fact that the private equity firm has clearly been unsuccessful at implementing its strategy, making it less likely that a market participant purchasing a minority interest would give as much credence to the private equity firm's plans to improve the cash flows and optimize the capital structure.

Allocation of Total Equity Values," summarizes the OPM equity allocation as of December 31, 2X10:

Table I-16**OPM Assumptions and Allocation of Total Equity Values****Major Assumptions (US\$ in 000s, except per share amounts)**

Valuation date	12/31/2X10
Liquidity event date	6/30/2X14
Time until liquidity event (years)	3.5
Total equity value (a)	\$104,000
Annual dividend rate for common stock	0.0%
Volatility (σ) (b)	106.0%
Risk-free rate (r) (c)	1.1%

Allocation of Total Equity Values

Event	Strike Price	Call Option Value	Incremental Call Option Value	Class A Units	Profits Interests	Total
Class A Units reach their liquidation preference	\$0	\$104,000	\$55,052	100.0%	0.0%	100.0%
Profits Interests begin participating	\$352,639	\$48,948	\$48,948	88.9%	11.1%	100.0%
			\$104,000	\$98,561	\$5,439	
			Number of shares	240,000	30,000	
			Value per share (pre-DLOM)	\$410.67	\$181.29	\$181.29
			less: 32%–67% DLOM (d)		(\$58.01)	(\$121.79)
			Value per share (non-marketable basis)		<u>\$123.28</u>	<u>\$59.98</u>

Notes:

- Total equity value consistent with the cash flows under current ownership and the required rate of return of the investors who in aggregate have control of the business.
- Volatility estimated based on the historical equity volatility of comparable firms.
- Interpolated yield on a US treasury security with a maturity of 3.5 years.
- DLOM based on the Finnerty (2012) and Asian protective put methods: 3.5-year term, 147.3% volatility for the profits interests, and a 1.1% risk-free rate. Note that these methods are not the only appropriate methods for estimating a DLOM; please see footnote 6 in paragraph I.14.

The OPM—Enterprise Value Allocation: December 31, 2X10

I.62 It is also possible to use the OPM to allocate the enterprise value to both the debt and equity securities. As discussed in paragraph 5.19, the first step in this process is to estimate the zero coupon bond equivalent for the debt, given its fair value. Given the fair value of the debt of \$671 million, as described previously, the Specialist calculated the zero coupon bond equivalent for the

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debt (the strike price at which the value allocated to the debt equals this fair value) as \$1,358.1 million.¹⁷

I.63 The Specialist then included the zero coupon bond equivalent within the OPM as the first breakpoint, using the 40 percent asset volatility to allocate the enterprise value across the debt, Class A units, and Class B units. Table I-17, "OPM Assumptions and Allocation of Total Enterprise Values," summarizes the OPM enterprise value allocation as of December 31, 2X10:

Table I-17

OPM Assumptions and Allocation of Total Enterprise Values

Major Assumptions (US\$ in 000s, except per share amounts)

Valuation date	12/31/2X10
Liquidity event date	6/30/2X14
Time until liquidity event (years)	3.5
Total enterprise value (a)	\$775,000
Annual dividend rate for common stock	0.0%
Volatility (σ) (b)	40.0%
Risk-free rate (c)	1.1%

Allocation of Total Enterprise Values

Event	Strike Price	Call Option Value	Incremental Call Option Value	Redeemable	Class A Units	Profits Interests	Total
Redeemable reach their liquidation preference	\$0	\$775,000	\$671,013	100.0%	0.0%	0.0%	100.0%
Class A Units reach their liquidation preference	\$1,358,098	\$103,987	\$37,310	0.0%	100.0%	0.0%	100.0%
Profits Interests begin participating	\$1,710,737	\$66,678	\$66,678	0.0%	88.9%	11.1%	100.0%
			\$775,000	\$671,013	\$96,579	\$7,409	
		Number of shares		671,013	240,000	30,000	
		Value per share (pre-DLOM)		\$1,000.00	\$402.41	\$246.95	\$246.95
		less: 32%–55% DLOM (d)				(\$78.45)	(\$135.82)
		Value per share (non-marketable basis)				<u>\$168.50</u>	<u>\$111.13</u>

¹⁷ Note that it is not appropriate to use the OPM to allocate value to the senior and mezzanine debt tranches separately due to the "sandwich problem." See paragraph 6.36c.

OPM Assumptions and Allocation of Total Enterprise Values—continued**Notes:**

- (a) Total enterprise value consistent with the cash flows under current ownership and the required rate of return of the investors who in aggregate have control of the business.
- (b) Volatility estimated based on the historical asset volatility of comparable firms.
- (c) Interpolated yield on a US treasury security with a maturity of 3.5 years.
- (d) DLOM based on the Finnerty (2012) and Asian protective put methods: 3.5-year term, 122.3% volatility for the profits interests, and a 1.1% risk-free rate. Note that these methods are not the only appropriate methods for estimating a DLOM; please see footnote 6 in paragraph I.14.

I.64 As discussed in paragraph 6.36c, this method has the effect of shifting value from the Class A units to the Class B units. Because the OPM assumes that the Company's value will evolve without intervention until a future liquidity event, the liquidation preference for the Class A units is sandwiched between the debt and upside participation (shared between the Class A and Class B units). In the downside scenarios, the debt receives 100 percent of the Company value at the liquidity event; in the upside scenarios, the Class B units participate fully in the increase in value. In practice, in these situations, it would be highly unusual for the private equity investors to allow things to ride without intervention. For example, following the financial crisis, there were many situations in which the private equity investors negotiated with debt investors to redeem a portion of the debt at less than par, taking a larger equity stake in the Company in exchange.

June 30, 2X11, Valuation***The OPM—Equity Allocation: June 30, 2X11***

I.65 By June 30, 2X11, Doggo's performance had continued to decline, with LTM EBITDA of just over \$110 million. Because the outstanding principal for the senior debt was still \$584.7 million, and expected debt servicing costs for the next year were \$43.2 million, any further declines in performance might also cause the Company to violate certain covenants on the senior debt. To address this situation, the original private equity investor and a new third-party private equity investor negotiated with the Company and debt holders to invest \$25 million in new Class AA units, the proceeds of which would be used to buy back senior debt at 80 percent of par. The new Class AA units had a face value of \$1,000 per unit; were senior to the existing Class A units, with a 2x liquidation preference and 8 percent dividends; and would participate pro-rata in any upside appreciation for the Company. This investment allowed the Company to bring the senior debt balance down by \$31.25 million, reducing it to \$553.5 million. The Company also experienced additional turnover among the executive team and issued additional B units to the replacement hires. In connection with the new grant, the Company retained the services of the Firm to estimate the fair value of the Class B units as of June 30, 2X11.

I.66 The Specialist estimated the total enterprise value of the Company to be approximately \$750 million based on a DCF method, which yielded an estimated total enterprise value of \$780 million, and the guideline public company method based on an EBITDA multiple of 6.5 that yielded an estimated total enterprise value of \$720 million. (DCF and the guideline public company methods were weighted equally.) This enterprise value reflects the

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value of the enterprise under current ownership through the expected liquidity event.¹⁸

I.67 The total book value of the Company's debt as of June 30, 2X11, after buying back a portion of the senior debt was \$1,021.3 million, including \$553.5 million for the senior debt (\$600 million, less 2 years of amortization on a 30-year amortization schedule, less the \$31.25 million buy back) and \$467.9 million for the mezzanine debt (\$360 million plus 2 years of PIK interest at 14 percent). The Specialist estimated the market yield for the debt considering both the improvement in overall market conditions and decline in the Company's performance. Based on these factors, for the senior debt, the Specialist selected a market yield based on the Company's B- corporate family rating after a recent downgrade, indicating a B- rating with a 19 percent yield. For the junior debt, given that the interest is entirely PIK and considering the increased risk with the declining enterprise value, the Specialist selected a market yield based on a CC+ rating with a 35 percent yield. The Specialist then used a DCF analysis to estimate the fair value of the senior debt at \$392.9 million, or approximately 71 percent of par, and the fair value of the mezzanine debt at \$258.9 million, or approximately 55 percent of par. Finally, the Specialist estimated the total equity value by subtracting the fair value of debt from the total enterprise value, concluding on a total equity value of \$98.2 million.

I.68 As in the original analysis, the Specialist used a relevered volatility, estimating a similar volatility to that used in the December 31, 2X10, analysis. Table I-18, "OPM Assumptions and Allocation of Total Equity Values," summarizes the OPM equity allocation as of June 30, 2X11:

Table I-18

OPM Assumptions and Allocation of Total Equity Values

Major Assumptions (US\$ in 000s, except per share amounts)

Valuation date	6/30/2X11
Liquidity event date	6/30/2X14
Time until liquidity event (years)	3.0
Total equity value (a)	\$98,200
Annual dividend rate for common stock	0.0%
Volatility (σ) (b)	106.0%
Risk-free rate (r) (c)	1.6%

¹⁸ In this example, the increase in the selected multiple from the December 31, 2X10, estimate of 6 times LTM EBITDA to 6.5 times LTM EBITDA is partially attributable to an overall market improvement during this period and partially attributable to the fact that the ongoing decline in LTM EBITDA in the first half of 2X11 reflected the legacy performance under the previous executive team, and the new executive team had shown signs of turning things around.

OPM Assumptions and Allocation of Total Equity Values—continued**Allocation of Total Equity Values**

Event	Strike Price	Call Option Value	Incremental Call Option Value	Class AA Units	Class A Units	Profits Interests	
Class AA Units reach their liquidation preference	\$0	\$98,200	\$25,379	100.0%	0.0%	0.0%	
Class A Units reach their liquidation preference	\$56,493	\$72,821	\$35,737	0.0%	100.0%	0.0%	
Profits Interests begin participating	\$409,132	\$37,084	\$37,084	8.5%	81.4%	10.2%	
			\$98,200	\$28,522	\$65,907	\$3,771	
			Number of shares	25,000	240,000	30,000	
			Value per share (pre-DLOM)	\$1,140.89	\$274.61	\$125.71	\$125.71
			less: 32%–66% DLOM (d)			(\$40.23)	(\$82.97)
			Value per share (non-marketable basis)			<u>\$85.48</u>	<u>\$42.74</u>

Notes:

- Total equity value consistent with the cash flows under current ownership and the required rate of return of the investors who in aggregate have control of the business.
- Volatility estimated based on the historical equity volatility of comparable firms.
- Interpolated yield on a US treasury security with a maturity of 3.0 years.
- DLOM based on the Finnerty (2012) and Asian protective put methods: 3-year term, 159.0% volatility for the profits interests, and a 1.6% risk-free rate. Note that these methods are not the only appropriate methods for estimating a DLOM; please see footnote 6 in paragraph I.14.

I.69 The Specialist also considered using the backsolve method, basing the equity valuation on the transaction price for the Class AA units. However, because the Class AA financing was a relatively small investment that was senior to the previous round, the Specialist was concerned that using the backsolve method might understate the total equity value. In particular, the Specialist noted that using the backsolve method would result in a total equity value of less than \$77 million and an indicated value of the Class A units of only \$200 per unit. Instead, the Specialist chose to rely on the DCF method and the guideline company method, as described previously. The Specialist then compared the value of the Class AA units from the model to the transaction price and observed that the model value was approximately 15 percent higher. Given the nature of the negotiations, the Specialist considered this difference to be reasonable.

Summary

I.70 The value allocation methods presented in this appendix result in different estimates of fair value for the securities. As discussed in chapter 6, each method would be more appropriate in certain circumstances than others. A valuation specialist typically selects one (or at most two) methods for use in a valuation.

Appendix J

Illustrative Document Request to Be Sent to Enterprise to Be Valued

J.01 The following document request letter may serve as a starting point for the valuation specialist to identify and request documents and information needed to perform a valuation of privately held equity securities issued by an enterprise. Because every enterprise is different, this illustrative letter, if used, should be modified to fit the particular circumstances of the enterprise. Furthermore, although the more important documents typically required for a valuation have been identified herein, it is the responsibility of the valuation specialist to augment this list with any other items considered appropriate for the circumstances.

October 1, 20XX
CEO or CFO
ABC Company, Inc.
123 Main Street
Anywhere, USA 00000-0000

RE: Valuation Services

Dear CEO or CFO:

We have compiled the following list for ABC Company, Inc., hereinafter referred to as the Company. Please provide the following documents, if available:

1. Audited annual financial statements for each of the last five years or from inception, whichever is shorter. If audited financial statements are not available, please provide whatever level of financial statements has been prepared.
2. The most recent interim financial statements—month-to-date and year-to-date.
3. Income tax returns for periods corresponding to the annual financial statements.
4. Copies of all drafts and final private placement memorandums or other documents produced to solicit investment in the Company.
5. A list of the number of shares outstanding, broken down by class, as of the valuation date.
6. Summary of all material transactions in the Company's stock, including terms and amounts received.
7. Copies of all agreements relating to the Company's stock, including items such as registration rights and stockholder agreements.
8. Copies of any business plans or forecasts, even if works in progress.
9. Pamphlets or brochures detailing operations, services, and products of the Company.
10. A press kit, if available.
11. Corporate minutes for the last three years.

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12. Corporate documents, including articles of incorporation and by-laws.
13. Copies or summaries of any significant loan agreements, security agreements, guarantees, and notes payable to financial institutions or other lenders.
14. Copies of any appraisals performed within the last three years on the Company, real estate owned by the Company, or personal property directly or indirectly related to operations or investments.
15. Employee or corporate manuals detailing the Company's history, goals, policies, procedures, job descriptions, operations, and other significant data.
16. A list of all key employees, including their dates of hire, positions held, annual compensation (base and bonus), and stock ownership.
17. A list of all personnel who have executed a noncompete agreement or employment contract with the Company, along with representative copies of such contracts.
18. Buy-sell or other agreements between stockholders and the Company.
19. A list of all owned trademarks, trade names, copyrights, domain names, and so on and any corresponding expiration dates.
20. A list, description (including expiration dates), and copies of all patents owned or under application.
21. Copies of any partnering agreements, revenue sharing agreements, or joint ventures of strategic importance to the Company.
22. For any internally developed software, a description of function, programming language, and man hours to replicate and a list of any comparable off-the-shelf software available.
23. Detailed property and depreciation schedules as of the last fiscal year-end.
24. List of stockholders, including an analysis of the Company's equity account, including shares held by individuals; options outstanding (term, grant date, exercise price); and so on.
25. Copies of all stock option plan agreements.
26. Detailed option history summarizing the date granted, date exercised, transaction amounts (gross and net of exercise amount due to the Company), and number of shares exercised for all option grants (to the extent not listed in item 24).
27. Summary of stock splits from inception for the stock that underlies the option(s).
28. A list of perceived competitors.

There will likely be additional items we will need as our work progresses. In addition, we will want to visit the Company to conduct our regular interviews. If you have any questions, please do not hesitate to contact us.

Sincerely,

[Valuation Specialist]

Appendix K

Illustrative List of Assumptions and Limiting Conditions of a Valuation Report

K.01 The valuation report or calculation report should include a list of assumptions and limiting conditions under which the engagement was performed.¹ This appendix includes an illustrative list. It is important for a reader to understand the limits of a valuation report. Although a valuation specialist would be expected to question information received from management if it appeared to be unreasonable or inconsistent, valuation specialists do not audit the information received from management. This illustrative list is reproduced from appendix A, "Illustrative List of Assumptions and Limiting Conditions for a Business Valuation," of Statement on Standards for Valuation Services No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100).

Illustrative List of Assumptions and Limiting Conditions

1. The conclusion of value arrived at herein is valid only for the stated purpose as of the date of the valuation.
2. Financial statements and other related information provided by [ABC Company] or its representatives, in the course of this engagement, have been accepted without any verification as fully and correctly reflecting the enterprise's business conditions and operating results for the respective periods, except as specifically noted herein. [Valuation Firm] has not audited, reviewed, or compiled the financial information provided to us and, accordingly, we express no audit opinion or any other form of assurance on this information.
3. Public information and industry and statistical information have been obtained from sources we believe to be reliable. However, we make no representation as to the accuracy or completeness of such information and have performed no procedures to corroborate the information.
4. We do not provide assurance on the achievability of the results forecasted by [ABC Company] because events and circumstances frequently do not occur as expected; differences between actual and expected results may be material; and achievement of the forecasted results is dependent on actions, plans, and assumptions of management.
5. The conclusion of value arrived at herein is based on the assumption that the current level of management expertise and effectiveness would continue to be maintained, and that the character and integrity of the enterprise through any sale, reorganization, exchange, or diminution of the owners' participation would not be materially or significantly changed.

¹ See paragraph 13.06m.

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6. This report and the conclusion of value arrived at herein are for the exclusive use of our client for the sole and specific purposes as noted herein. They may not be used for any other purpose or by any other party for any purpose. Furthermore the report and conclusion of value are not intended by the author and should not be construed by the reader to be investment advice in any manner whatsoever. The conclusion of value represents the considered opinion of [*Valuation Firm*], based on information furnished to them by [*ABC Company*] and other sources.
7. Neither all nor any part of the contents of this report (especially the conclusion of value, the identity of any valuation specialist(s), or the firm with which such valuation specialists are connected or any reference to any of their professional designations) should be disseminated to the public through advertising media, public relations, news media, sales media, mail, direct transmittal, or any other means of communication without the prior written consent and approval of [*Valuation Firm*].
8. Future services regarding the subject matter of this report, including, but not limited to testimony or attendance in court, shall not be required of [*Valuation Firm*] unless previous arrangements have been made in writing.
9. [*Valuation Firm*] is not an environmental consultant or auditor, and it takes no responsibility for any actual or potential environmental liabilities. Any person entitled to rely on this report, wishing to know whether such liabilities exist, or the scope and their effect on the value of the property, is encouraged to obtain a professional environmental assessment. [*Valuation Firm*] does not conduct or provide environmental assessments and has not performed one for the subject property.
10. [*Valuation Firm*] has not determined independently whether [*ABC Company*] is subject to any present or future liability relating to environmental matters (including, but not limited to CERCLA/Superfund liability) nor the scope of any such liabilities. [*Valuation Firm*]'s valuation takes no such liabilities into account, except as they have been reported to [*Valuation Firm*] by [*ABC Company*] or by an environmental consultant working for [*ABC Company*], and then only to the extent that the liability was reported to us in an actual or estimated dollar amount. Such matters, if any, are noted in the report. To the extent such information has been reported to us, [*Valuation Firm*] has relied on it without verification and offers no warranty or representation as to its accuracy or completeness.
11. [*Valuation Firm*] has not made a specific compliance survey or analysis of the subject property to determine whether it is subject to, or in compliance with, the American Disabilities Act of 1990, and this valuation does not consider the effect, if any, of noncompliance.
12. [*Sample wording for use if the jurisdictional exception is invoked.*] The conclusion of value (or the calculated value) in this report deviates from the Statement on Standards for Valuation Services as a result of published governmental, judicial, or accounting authority.

13. No change of any item in this appraisal report shall be made by anyone other than [*Valuation Firm*], and we shall have no responsibility for any such unauthorized change.
 14. Unless otherwise stated, no effort has been made to determine the possible effect, if any, on the subject business due to future Federal, state, or local legislation, including any environmental or ecological matters or interpretations thereof.
 15. If prospective financial information approved by management has been used in our work, we have not examined or compiled the prospective financial information and therefore, do not express an audit opinion or any other form of assurance on the prospective financial information or the related assumptions. Events and circumstances frequently do not occur as expected and there will usually be differences between prospective financial information and actual results, and those differences may be material.
 16. We have conducted interviews with the current management of [*ABC Company*] concerning the past, present, and prospective operating results of the company.
 17. Except as noted, we have relied on the representations of the owners, management, and other third parties concerning the value and useful condition of all equipment, real estate, investments used in the business, and any other assets or liabilities, except as specifically stated to the contrary in this report. We have not attempted to confirm whether or not all assets of the business are free and clear of liens and encumbrances or that the entity has good title to all assets.
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Appendix L

Bibliography and Other References

L.01 The following references and companies are cited in this guide.

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Glossary

This glossary contains terms from the following sources when indicated:

- *International Glossary of Business Valuation Terms (IGBVT)*, which has been adopted by a number of professional societies and organizations, including the AICPA
- Financial Accounting Standards Board (FASB) *Accounting Standards Codification*TM (ASC)
- Statement on Standards for Valuation Services (SSVS) No. 1, *Valuation of a Business, Business Ownership Interest, Security, or Intangible Asset* (AICPA, *Professional Standards*, VS sec. 100)

acquisition premium.¹ In a merger or an acquisition, the difference between the purchase price and preacquisition value of the target firm.

active market. A market in which transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis. (FASB ASC master glossary)

alpha testing. A process of obtaining opinions from selected users (typically from within the enterprise) on an enterprise's product or service under development for the purpose of testing performance and quality and making improvements prior to more widespread (beta) testing; see also **beta testing**.

angel. An individual who provides capital to one or more start-up enterprises. (The individual typically is affluent or has a personal stake in the success of the venture. Such investments are characterized by high levels of risk and a potentially large return on investment.)

antidilution right. A right that provides one or more classes of equity with protection against dilution in the event of subsequent down rounds of financing. These rights result in an automatic adjustment of the original conversion ratio of preferred stock to common stock in the event that an enterprise subsequently issues stock at a price per share below the original issue price of the existing preferred stock.

asset accumulation method. A method commonly under the asset approach under which the value of the enterprise is determined to be the net of the fair value of the enterprise's individual assets and liabilities. The asset accumulation method is also commonly referred to as the adjusted net asset value method or the adjusted book value method.

asset approach. A general way of determining a value indication of a business, business ownership interest, or security using one or more methods based on the value of the assets net of liabilities (IGBVT). Also known as asset-based approach.

backsolve method. A method within the market approach wherein the equity value for a privately held company is derived from a recent transaction

¹ As of the writing of this guide, the Appraisal Foundation is working on a project regarding the assessment and measurement of control premiums in valuations for financial reporting. The purpose of this project is to present views on how to approach and apply certain aspects of the valuation process appropriate for measuring the fair value of controlling interests in business enterprises for financial reporting purposes. Please refer to the Appraisal Foundation's website at www.appraisalfoundation.org for further information about this project and its status.

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in the company's own securities. (This term is used by some business valuation specialists but generally is not found in valuation literature.)

basis of valuation. The basis of valuation reflects the types of premiums or discounts that should be considered for the subject interest, given the premise of value. In traditional valuation practice, valuations may be considered on a controlling or minority basis and on a marketable or nonmarketable basis. In valuing a minority interest in an enterprise, the basis of valuation for the enterprise should be consistent with the required rate of return for the investors who in aggregate have control over the business. Additional premiums or discounts may be applied to the extent that the required rate of return for the minority investors would differ from that for the investors who in aggregate have control over the business. See chapter 7, "Control and Marketability."

beta testing. A second stage (following alpha testing) of testing a new product or service in which an enterprise makes it available to selected users who use it under normal operating conditions and in the kind of environment in which it will be used more widely; see also **alpha testing**.

board composition rights. Rights that provide preferred stockholders the ability to control the board composition in a manner that is disproportionate to their share ownership.

burn rate. For an enterprise with negative cash flow, the rate of that negative cash flow, typically per month.

capital asset pricing model (CAPM). A model in which the cost of capital for any stock or portfolio of stocks equals a risk-free rate plus a risk premium that is proportionate to the systematic risk of the stock or portfolio. (IGBVT)

contemporaneous valuation. A valuation that is performed concurrent with, or a short time after, the as-of date of the valuation; see also **retrospective valuation**.

control. The power to direct the management and policies of a business enterprise. (IGBVT)

control premium.² An amount or a percentage by which the pro rata value of a controlling interest exceeds the pro rata value of a noncontrolling interest³ in a business enterprise to reflect the power of control. (IGBVT)

conversion right. A feature on some bonds and preferred stock issues allowing the holder to convert the securities into common stock.

cost approach. A valuation technique that reflects the amount that would be required currently to replace the service capacity of an asset (often referred to as current replacement cost). (FASB ASC master glossary) A general way of determining a value indication of an individual asset by quantifying the amount of money required to replace the future service capability of that asset. (IGBVT)

² See footnote 1 in the glossary.

³ It should be noted that in this definition, the reference to noncontrolling interest is similar to *minority interest* throughout this guide. It is not intended to refer to noncontrolling interest addressed in Financial Accounting Standards Board (FASB) *Accounting Standards Codification* (ASC) 810, *Consolidation*. See footnote 8 in paragraph .10.

- cost of capital.** The expected rate of return that the market requires in order to attract funds to a particular investment. (IGBVT)
- discount for lack of marketability.** See **marketability discount**.
- discount rate.** A rate of return used to convert a future monetary sum into present value. (IGBVT)
- discount rate adjustment technique.** A present value technique that uses a risk-adjusted discount rate and contractual, promised, or most likely cash flows. (FASB ASC master glossary)
- discounted cash flow (DCF) method.** A method within the income approach whereby the present value of future expected net cash flows is calculated using a discount rate. (IGBVT)
- down round.** A round of financing in which investors purchase stock from an enterprise at a lower price than the previous round.
- drag-along rights.** Rights that allow one class of shareholder to compel the holders of one or more other classes of shares to vote their shares as directed in matters relating to sale of the enterprise.
- EBIT.** Earnings before interest and taxes.
- EBITDA.** Earnings before interest, taxes, depreciation, and amortization.
- EITF.** Emerging Issues Task Force of FASB.
- enterprise value.** For purposes of this guide, enterprise value is defined as the value of equity and interest-bearing debt. In broader valuation practice, the term *enterprise value* is sometimes used to refer to the value of equity and interest-bearing debt, less all cash and equivalents; however, for this guide, the task force considers enterprise value to include cash and cash equivalents. Enterprise value may also be referred to as invested capital, market value of invested capital (**MVIC**), or total enterprise value.
- equity value.** For purposes of this guide, the enterprise value, less the fair value of debt, measured considering the required rate of return for the investors who in aggregate have control over the business, as discussed in paragraphs 5.03–.04 and 5.08.
- expected cash flow.** The probability-weighted average (that is, mean of the distribution) of possible future cash flows. (FASB ASC master glossary)
- expected present value technique.** A technique that uses as a starting point a set of cash flows that represents the probability-weighted average of all possible future cash flows (that is, the expected cash flows). The resulting estimate is identical to expected value, which, in statistical terms, is the weighted average of a discrete random variable's possible values with the respective probabilities as the weights. Because all possible cash flows are probability-weighted, the resulting expected cash flow is not conditional upon the occurrence of any specified event (unlike the cash flows used in the discount rate adjustment technique). (FASB ASC 820-10-55-13)
- FASB.** Financial Accounting Standards Board.
- fair market value.** The price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arm's length

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in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts. (IGBVT)

fair value. The amount at which an asset (or liability) could be bought (or incurred) or sold (or settled) in a current transaction between willing parties, that is, other than in a forced or liquidation sale. (FASB ASC 718 and FASB ASC 505-50)

fair value. The price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. (FASB ASC 820)

fairness opinion. An opinion as to whether or not the consideration in a transaction is fair from a financial point of view. (IGBVT)

first refusal rights. Contractual rights frequently granted to venture capitalists to purchase shares of common stock held by other shareholders (typically, founders and key management) before such shares may be sold to a third party.

full ratchet. An antidilution provision that uses the lowest sales price for any shares of common stock sold by an enterprise after the issuance of an option (or convertible security) as the adjusted option price or conversion price for existing shareholders.

guideline company transactions method. A method within the market approach whereby market multiples are derived from the sales of entire companies engaged in the same or similar lines of business. (Appendix C, "Glossary of Additional Terms," of SSVS No. 1)

guideline public company method. A method within the market approach whereby market multiples are derived from market prices of stocks of companies that are engaged in the same or similar lines of business and that are actively traded on a free and open market. (IGBVT)

hybrid method. The hybrid method is a hybrid between the probability-weighted expected return method and option pricing method (OPM), estimating the probability weighted value across multiple scenarios but using OPM to estimate the allocation of value within one or more of those scenarios.

IPO. Initial public offering.

income approach. Valuation techniques that convert future amounts (for example, cash flows or income and expenses) to a single current (that is, discounted) amount. The fair value measurement is determined on the basis of the value indicated by current market expectations about those future amounts. (FASB ASC master glossary) A general way of determining a value indication of a business, business ownership interest, security, or intangible asset using one or more methods that convert anticipated economic benefits into a present single amount (IGBVT). Also known as income-based approach.

information rights. Contractual rights of access to prespecified information, such as monthly or audited financial statements or the annual operating plan, within a specified time period after that information is available to management.

junior security. A security that ranks lower than other securities in regard to the owner's claims on assets and income in the event of the enterprise becoming insolvent. Sometimes, the term is used interchangeably with junior equity security.

lead investor. Usually a private equity or venture capital firm that takes the lead in negotiating the terms of the deal or makes the initial investment in the company.

liquidation preference. The right to receive a specific value for shares of stock if an enterprise is liquidated. (In this context, a dissolution, merger, sale, change of control, or sale of substantially all assets of an enterprise are collectively referred to as a liquidation.)

liquidity event. A change or transfer in ownership of an enterprise (for example, an IPO, merger, sale, change of control, sale of substantially all assets, or dissolution). Note, however, that although an IPO can provide liquidity to the company's freely traded shares and also, in most cases, leads to the conversion of the preferred stock and, thus, resolves the optionality of the common stock, it seldom provides liquidity for all shareholders.

MVIC. Market value of invested capital.

management rights. Contractual rights to perform certain specific activities normally afforded only to management, such as rights to inspect in detail an enterprise's books and accounts as well as rights to visit board meetings.

mandatory redemption rights. Contractual rights to redeem one's investment for a specific amount.

market approach. A valuation technique that uses prices and other relevant information generated by market transactions involving identical or comparable (that is, similar) assets, liabilities, or a group of assets and liabilities, such as a business. (FASB ASC master glossary) A general way of determining a value indication of a business, business ownership interest, security, or intangible asset by using one or more methods that compare the subject to similar businesses, business ownership interests, securities, or intangible assets that have been sold (IGBVT). Also known as market-based approach.

market participants. Buyers and sellers in the principal (or most advantageous) market for the asset or liability that have all of the following characteristics:

- a. They are independent of each other, that is, they are not related parties, although the price in a related-party transaction may be used as an input to a fair value measurement if the reporting entity has evidence that the transaction was entered into at market terms
- b. They are knowledgeable, having a reasonable understanding about the asset or liability and the transaction using all available information, including information that might be obtained through due diligence efforts that are usual and customary
- c. They are able to enter into a transaction for the asset or liability

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- d. They are willing to enter into a transaction for the asset or liability, that is, they are motivated but not forced or otherwise compelled to do so.

(FASB ASC master glossary)

marketability discount (discount for lack of marketability). An amount or percentage deducted from the value of an ownership interest to reflect the relative absence of marketability. (IGBVT)

mezzanine financing. A financing round generally associated with venture capital-backed enterprises occurring after the enterprise has developed its product or service and has commenced operations but before the enterprise is ready for an IPO or to be acquired.

minority interest. An ownership interest with less than 50 percent of the voting interest in a business enterprise. (IGBVT)

partial ratchet. An antidilution provision that uses some type of weighted average sales price of shares of common stock sold by an enterprise after the issuance of an option (or convertible security) as the adjusted option price or conversion price for existing shareholders.

participation rights. Rights that relate to situations when after the holders of preferred stock receive their full liquidation preference, they are then entitled to share with the holders of common stock in the remaining amount being paid for the company.

postmoney value. An enterprise's value immediately following its most recent round of financing; see also **premoney value**.

premise of value. An assumption regarding the most likely set of transactional circumstances that may be applicable to the subject valuation; for example, going concern, liquidation. (IGBVT)

premoney value. An enterprise's value immediately preceding its most recent round of financing; see also **postmoney value**.

prospective financial information (PFI). Any financial information about the future. The information may be presented as complete financial statements or limited to one or more elements, items, or accounts. (AICPA Guide *Prospective Financial Information*)

qualified initial public offering. An IPO in which the price per share at which the enterprise's stock is issued to the public and the aggregate proceeds received by the enterprise from the IPO exceed certain prespecified levels.

registration rights. Contractual rights of an investor to require an enterprise to register and to sell his or her unregistered stock in the enterprise.

related parties. Related parties include:

- a. Affiliates of the entity
- b. Entities for which investments in their equity securities would be required, absent the election of the fair value option under the "Fair Value Option" subsection of Section 825-10-15, to be accounted for by the equity method by the investing entity

- c. Trusts for the benefit of employees, such as pension and profit-sharing trusts that are managed by or under the trusteeship of management
- d. Principal owners of the entity and members of their immediate families
- e. Management of the entity and members of their immediate families
- f. Other parties with which the entity may deal if one party controls or can significantly influence the management or operating policies of the other to an extent that one of the transacting parties might be prevented from fully pursuing its own separate interests
- g. Other parties that can significantly influence the management or operating policies of the transacting parties or that have an ownership interest in one of the transacting parties and can significantly influence the other to an extent that one or more of the transacting parties might be prevented from fully pursuing its own separate interests

(FASB ASC master glossary)

reload features. Provides for automatic grants of additional options whenever an employee exercises previously granted options using the entity's shares, rather than cash, to satisfy the exercise price. At the time of exercise using shares, the employee is automatically granted a new option, called a reload option, for the shares used to exercise the previous option. (FASB ASC master glossary)

replacement cost new. The current cost of a similar new property having the nearest equivalent utility to the property being valued. (IGBVT) Also known as *current replacement cost* or *replacement cost*.

reproduction cost new. The current cost of an identical new property. (IGBVT) Also known as *reproduction cost*.

required rate of return. The minimum rate of return acceptable by investors before they will commit money to an investment at a given level of risk. (IGBVT)

retrospective valuation. A valuation that is performed after the as-of date of the valuation and that is not considered to be a contemporaneous valuation; see also **contemporaneous valuation**.

right to participate in future rounds. Contractual right that allows each preferred stockholder to purchase a portion of any offering of new securities of the enterprise based on the proportion that the number of shares of preferred stock held by such holder (on an as-converted basis) bears to the enterprise's fully diluted capitalization or total preferred equity. The right to participate in future rounds gives the preferred stockholders the ability to maintain their respective ownership percentages and restricts the ability of common stockholders to diversify the shareholdings of the enterprise.

SSVS. Statement on Standards for Valuation Services issued by the AICPA and available in VS section 100.

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secondary market transaction. A transaction in which nonpublic debt or equity securities are traded, either directly on a secondary exchange or by the use of the exchange as an intermediary. A secondary market transaction differs from a public market transaction in that the securities transacted are not public; therefore, the buyers in these transactions must be qualified investors, and the issuers of the securities are not subject to public company reporting requirements.

seed capital. The initial equity capital used to start a new enterprise, typically provided in order to develop a business concept before the enterprise is started.

senior security. A security that has priority over other securities in the event of a claim or bankruptcy liquidation. Sometimes, the term is used interchangeably with senior equity security.

simple capital structure. A capital structure that includes only common stock, plus debt, debt-like preferred securities, or both.

standard of value. The identification of the type of value being utilized in a specific engagement; for example, fair market value, fair value, investment value. (IGBVT)

sunk costs. Costs already incurred that cannot be recovered, regardless of future events.

synergy. Used mostly in the context of mergers and acquisitions, the concept that the value and performance of two enterprises combined will be greater than the sum of the separate individual parts. In the context of developing prospective financial information, synergies refer to the difference between the assumptions used to estimate cash flows that are unique to an enterprise and the assumptions that would be used by synergistic buyers.

tag-along investors. Investors who typically purchase an interest in a deal negotiated by another party (the lead or other follow-on investor).

tag-along rights. Contractual rights typically granted by founders and key management shareholders in connection with a venture capital investment. Founders and key management shareholders typically agree that they will not sell any of their common shares in the enterprise without giving the investors the right to participate in the sale with the founder and management sellers pro rata to the investors' holdings; also referred to as co-sale rights.

terminal value. The value as of the end of the discrete projection period in a discounted future earnings model. (IGBVT) In the context of this guide, this represents enterprise value as of the end of the discrete cash flow period in a discounted cash flow model when earnings are expected to stabilize. Also known as residual value.

top-down method. Valuation method that involves first valuing an enterprise and then using that enterprise valuation as a basis for valuing the enterprise's securities.

USPAP. *Uniform Standards of Professional Appraisal Practice* published by the Appraisal Foundation.

- unobservable inputs.** Inputs for which market data are not available and that are developed using the best information available about the assumptions that market participants would use when pricing the asset or liability. (FASB ASC master glossary)
- unrelated party.** Other than a *related party*, as defined in the FASB ASC master glossary.⁴
- up round.** A round of financing in which investors purchase stock from an enterprise at a higher price than the previous round.
- valuation specialist.** An individual recognized as possessing the abilities, skills, and experience to perform valuations. A valuation specialist may be external or internal. When referring to the valuation specialist in this guide, it is commonly presumed that it is an external party, but if individuals within the entity possess the abilities, skills, and experience to perform valuations, they can also serve in the capacity of a valuation specialist.
- voting rights.** Contractual rights to vote as a shareholder for members of the board of directors and other matters of corporate policy on the basis of the number and class of shares held.
- weighted average cost of capital (WACC).** The cost of capital (discount rate) determined by the weighted average, at market value, of the cost of all financing sources in the business enterprise's capital structure. (IGBVT)
- yield method.** The yield method is a type of discounted cash flow analysis that estimates the fair value of a debt security or debtlike preferred security based on the expected cash flows (given the contractual interest or dividend rate, any scheduled principal repayments, and the expected maturity), discounted at the market yield for the security given its risk. The expected maturity considers both the contractual maturity, as well as market participant assumptions regarding the expected timing of a liquidity event, and any principal repayments expected in connection with the liquidity event.
- zero coupon bond equivalent.** A zero coupon bond is a bond that has a face value that is payable at maturity, with no interim interest or principal payments. The fair value of a zero coupon bond is the face value discounted at the market yield from maturity back to the valuation date. The zero coupon bond equivalent for a debt instrument is the future payoff amount (face amount) for a zero coupon bond that has the same fair value as the debt instrument, considering the interest payment and principal amortization schedule for the debt instrument.

⁴ The task force recommends that consideration also be given to the requirements of item I.I.C., "Disclosures about Effects of Transactions with Related and Certain Other Parties," of Securities and Exchange Commission Release No. FR-61, *Commission Statement about Management's Discussion and Analysis of Financial Condition and Results of Operations*. Under that release, consideration should be given to relationships that might cause dealings between parties to be at other than arm's length despite the parties not being considered *related parties* under the FASB ASC definition. For example, an enterprise may be established and operated by individuals who were former senior management of, or have some other current or former relationship with, the other entity. Please see www.sec.gov/rules/other/33-8056.htm for more information.

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