

**Working Draft of**  
**Inventory Valuation Guidance**

**from**

**Forthcoming AICPA Accounting and Valuation Guide**  
***Business Combinations***

**Released November 19, 2018**

**Prepared by the Business Combinations Task Force**

Comments should be sent by May 1, 2019 to Yelena Mishkevich at  
[yelena.mishkevich@aicpa-cima.com](mailto:yelena.mishkevich@aicpa-cima.com)

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## *Preface*

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### **About This Inventory Valuation Guidance**

This Inventory Valuation Guidance has been developed by the AICPA Business Combinations Task Force (task force) and AICPA staff. This guidance is part of a broader forthcoming release of the AICPA's *Business Combinations Accounting and Valuation Guide* (guide). This working draft provides nonauthoritative guidance and illustrations for preparers of financial statements, independent auditors, and valuation specialists<sup>1</sup> regarding how to estimate the fair value of inventory acquired in a business combination in accordance with Financial Accounting Standards Board (FASB) ASC 820, *Fair Value Measurement*. This guidance is focused on measuring fair value of inventory for financial reporting purposes.

This guidance 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.

This guidance does the following:

- Identifies certain requirements set forth in the Financial Accounting Standards Board (FASB) *Accounting Standards Codification*<sup>®</sup> (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.

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<sup>1</sup> Although this guidance 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 a part of AICPA *Professional Standards*, defines a member who performs valuation services as a *valuation analyst*. Furthermore, the Mandatory Performance Framework (MPF) and Application of the MPF (collectively referred to as *MPF documents*), that were jointly developed by AICPA, RICS, and ASA in conjunction with the Certified in Entity and Intangible Valuations (CEIV) credential, define an individual who conducts valuation services for financial reporting purposes as a *valuation professional*. The term *valuation specialist*, as used in this guidance, is synonymous to the term *valuation analyst*, as used in AICPA *Professional Standards*, and the term *valuation professional*, as used in MPF documents.

This guidance is considered to be *technical literature* for purposes of the Mandatory Performance Framework (MPF) and Application of the MPF (collectively referred to as *MPF documents*), that were developed in conjunction with the Certified in Entity and Intangible Valuations (CEIV) credential.<sup>2</sup> 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 the AICPA's Statement on Standards for Valuation Services.

This guidance does not include auditing guidance;<sup>3</sup> however, auditors may use it to obtain an understanding of the valuation process applicable to inventory acquired in business combinations.

## Recognition

### Business Combinations Task Force

*(members when this working draft was completed)*

#### Accounting Subgroup:

Daniel Langlois, *Co-Chair*

Richard Cancro

Joshua Forgione

Sandra Heuer

Michael Morrissey

Robert Owens

Elizabeth Paul

#### Valuation Subgroup:

Mark Edwards, *Co-Chair*

Kellie Adkins

Frederik Bort

Michael Moskowitz

Stamos Nicholas

Matthew Pinson

Lance Robinson

Gary Roland

### AICPA Senior Committee

#### Financial Reporting Executive Committee

*(members when this working draft was completed)*

James Dolinar, *Chair*

J. Kelly Ardrey Jr.

Michelle Avery

Cathy Clarke

Mark Crowley

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<sup>2</sup> Additional information about the CEIV credential and MPF documents is available at <https://www.aicpa.org/interestareas/fairvaluemeasurement/resources/mandatory-performance-framework.html>.

<sup>3</sup> 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.

**AICPA Senior Committee**

**Financial Reporting Executive Committee**

Richard Dietrich  
William Fellows  
Joshua Forgione  
Angela Newell  
Mark Northan  
William Schneider  
Jay Seliber  
Jeff Sisk  
Lynne Triplett  
Jeremy Whitaker  
Michael Winterscheidt  
Aleks Zabreyko

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FinREC, the Business Combinations Task Force and the AICPA also thank the following individuals for their assistance in development of this guidance: Sally Bishop, Megan DuBato, Ryan Kaye, Timothy Kocses, Prashant Parikh, Margaret Ross, Stefanie Tamulis, Jennifer Yruma, and Yiren (Eva) Zhang.

**AICPA Staff**

Yelena Mishkevich  
*Senior Manager*  
*Accounting Standards*

Daniel Noll  
*Senior Director*  
*Accounting Standards*

# Inventory Valuation Guidance

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## Chapter 12

### *Inventory*

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#### *Background*

**12.01** Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) 805, *Business Combinations*, requires that inventory acquired in a business combination is recognized and measured at the acquisition date fair value in accordance with FASB ASC 820, *Fair Value Measurement*. The FASB ASC Master Glossary defines *inventory* as

The aggregate of those items of tangible personal property that have any of the following characteristics:

- a. Held for sale in the ordinary course of business
- b. In process of production for such sale
- c. To be currently consumed in the production of goods or services to be available for sale.

The term inventory embraces goods awaiting sale (the merchandise of a trading concern and the finished goods of a manufacturer), goods in the course of production (work in process), and goods to be consumed directly or indirectly in production (raw materials and supplies). This definition of inventories excludes long-term assets subject to depreciation accounting, or goods which, when put into use, will be so classified. The fact that a depreciable asset is retired from regular use and held for sale does not indicate that the item should be classified as part of the inventory. Raw materials and supplies purchased for production may be used or consumed for the construction of long-term assets or other purposes not related to production, but the fact that inventory items representing a small portion of the total may not be absorbed ultimately in the production process does not require separate classification. By trade practice, operating materials and supplies of certain types of entities such as oil producers are usually treated as inventory.

**12.02** The purpose of this section is to outline considerations for estimating the fair value of inventory. Illustrations of the valuation methodology described in this document (subsequently referred to as the *Guide*) are provided in Appendix A, “Abbreviated Example of Valuing Finished Goods Inventory,” and Appendix B, “Detailed Example of Valuing Finished Goods and Work-In-Process Inventory.” As discussed in FASB ASC 820-10-35-24, “[a] reporting entity shall use valuation techniques that are appropriate in the circumstances and for which sufficient data are available to measure fair value;” therefore, other methodologies may also be appropriate depending on the facts and circumstances. In addition, there may be situations in which it is not possible, necessary or practical to perform certain steps described in this Guide. This may occur, for example, due to materiality considerations or non-relevance of a particular step (for example, inventory holding costs may not be relevant when inventory turns over quickly). As a result, this Guide should not be utilized as a checklist in determining the necessary steps that are required in a given situation. When determining the extent of work to be performed in valuing a particular

asset or liability (including inventory), it is important to exercise professional judgment and consider specific facts and circumstances of each situation.

### *Existing Financial Reporting Valuation Guidance*

**12.03** FASB ASC 820 defines fair value and establishes a framework for measuring fair value for financial reporting purposes. Under FASB ASC 820, 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.” It is important to note that under this definition, fair value is an exit price and should be based on assumptions that market participants would use in pricing the asset. Thus, the fair value of inventory would be the amount that would be received by the reporting entity in a sale of the inventory in its existing condition (i.e. finished goods, work in process (WIP) or raw materials) to a market participant at the measurement date.

### *Highest and Best Use for Nonfinancial Assets*

**12.04** FASB ASC 820-10-35-9 provides that “[a] reporting entity shall measure the fair value of an asset or a liability using the assumptions that market participants would use in pricing the asset or liability, assuming that market participants act in their economic best interest.” Thus, the reporting entity would need to consider the general characteristics of a potential market participant, how they might differ from the reporting entity and how those differences (if any) would impact the amount that they would be willing to pay for the inventory.

**12.05** For nonfinancial assets (such as inventory), FASB ASC 820 also requires consideration of the asset’s highest and best use. The FASB ASC glossary defines *highest and best use* as “[t]he use of a nonfinancial asset by market participants that would maximize the value of the asset or the group of assets and liabilities (for example, a business) within which the asset would be used.” FASB ASC 820-10-35-10E states that the highest and best use of a nonfinancial asset is based on the premise that the asset would be used either (a) in combination with other assets as a group (as installed or otherwise configured for use) or in combination with other assets and liabilities (for example, a business) or (b) on a standalone basis.

**12.06** FASB ASC 820-10-35-10E(a)(3) indicates that if the highest and best use is in combination with other assets or with other assets and liabilities, then “[a]ssumptions about the highest and best use of a nonfinancial asset shall be consistent for all of the assets (for which highest and best use is relevant) of the group of assets or the group of assets and liabilities within which the asset would be used.” This concept is illustrated in Case A: Asset Group” in paragraphs 26-29 of FASB ASC 820-10-55, which demonstrates that if the highest and best use of the acquired assets is in a group by a certain market participant (current use), then this premise should be applied to all assets in the group, even if the fair value of some individual assets could be maximized on a standalone basis by a different market participant. Therefore, it is helpful to first consider the group of operating assets and liabilities which are used in combination, and then identify the highest and best use for that group of assets. FASB ASC 820-10-35-10C further provides that “a reporting entity’s current use of a nonfinancial asset is presumed to be its highest and best use unless market or other factors suggest that a different use by market participants would maximize the value of the asset.”



**12.07** The guidance in FASB ASC 820-10-35-10E(a)(1), indicates that “if the highest and best use of the asset is to use the asset in combination with other assets or with other assets and liabilities, the fair value of the asset is the price that would be received in a current transaction to sell the asset assuming that the asset would be used with other assets or with other assets and liabilities and that those assets and liabilities (that is, its complementary assets and the associated liabilities) would be available to market participants.” As such, if the highest and best use is in combination with a group of other assets, then it is assumed that the market participant will have or will acquire the complementary assets. For example, FASB ASC 820-10-55-3(c) states that “an asset’s use in combination with other assets or with other assets and liabilities might be incorporated into the fair value measurement through the market participant assumptions used to measure the fair value of the asset. For example, if the asset is work-in-process inventory that is unique and market participants would convert the inventory into finished goods, the fair value of the inventory would assume that market participants have acquired or would acquire any specialized machinery necessary to convert the inventory into finished goods.” When valuing inventory, the economic cost of using the complementary assets needed (if any)<sup>1</sup> to either finish production of the inventory (for WIP) or facilitate the sale of the inventory would need to be considered in the completion and disposal efforts in the inventory valuation.

**12.08** FASB ASC 820-10-05-1C requires that valuation techniques maximize the use of relevant observable inputs. To the extent that relevant observable inputs are not available, FASB ASC 820 allows for the use of unobservable inputs to measure fair value. However, as indicated in FASB ASC 820-10-35-53, the fair value measurement objective remains the same, that is, an exit price at the measurement date from the perspective of a market participant that holds the asset. According to FASB ASC 820-10-35-54A, a reporting entity should develop unobservable inputs using the best information available in the circumstances, which might include the reporting entity’s own data. However, as indicated in FASB ASC 820-10-35-53, unobservable inputs should reflect the assumptions that market participants would use when pricing the asset, including assumptions about risk. (Chapter 9, *Valuation Considerations in a Business Combination*, [which will be included in the Business Combinations Guide] provides additional discussion of the fair value concepts addressed in FASB ASC 820 and includes section on “Market Participant Characteristics” and “Consistency With Market Participant Assumptions”.)

### *Inventory Valuation Guidance*

**12.09** FASB ASC 820-10-55-21(f) states the following regarding inputs used in the valuation of inventory acquired in a business combination:

*Finished goods inventory at a retail outlet.* For finished goods inventory that is acquired in a business combination, a Level 2 input would be either a price to customers in a retail market or a price to retailers in a wholesale market, adjusted for differences between the condition and location of the inventory item and the comparable (that is, similar) inventory items so that the fair value measurement reflects the price that would be received in a transaction to sell the inventory to another retailer that would complete the requisite selling efforts. Conceptually, the fair value measurement will be the same, whether adjustments are made to a retail price (downward) or to a wholesale price (upward). Generally, the price

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<sup>1</sup> The economic cost of using the complementary assets needed may include, for example, rent or depreciation as well as the profit attributable to the use of the assets.

that requires the least amount of subjective adjustments should be used for the fair value measurement.

**12.10** In this example, the fair value measurement is based on market participants that are other retailers that would complete the requisite selling efforts on the finished goods inventory.

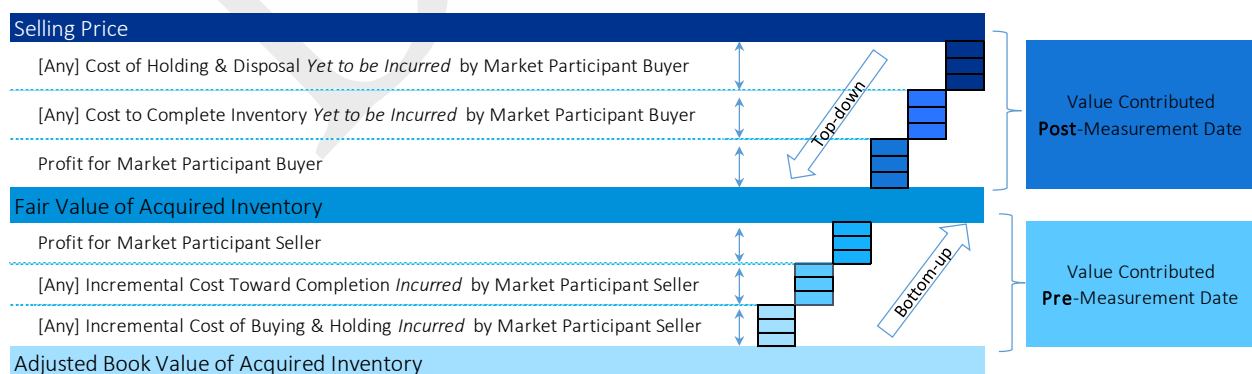
### *Inventory Valuation*

**12.11** The fair value of inventory acquired in a business combination is estimated as the value created prior to the acquisition date (subsequently referred to as the *measurement date*) based on market participant assumptions. This value results from the process of procuring raw materials, assembling, and producing the inventory prior to the measurement date. It is comprised of the raw materials, the direct and indirect expenses that were required to bring the inventory to its current form, as well as a profit or return on the expenses incurred, assets used or capital invested. The price that a market participant seller of that inventory would be willing to accept and a market participant buyer would be willing to pay would generally reflect the efforts contributed during that process.

**12.12** Conceptually, the fair value of inventory would provide the market participant seller with fair compensation for the efforts and costs previously incurred and assets used related to the inventory and, likewise, would provide the market participant buyer with fair compensation for its purchase, risk, future efforts and assets utilized to complete and dispose of the inventory post-measurement date.

**12.13** As presented in the following diagram, the analysis of inventory can be thought of as an allocation of value created pre-measurement date versus post-measurement date. In theory, each expense is incurred with the expectation of earning a profit. As a result, the selling price that would be expected to be received for inventory would reflect compensation for all the incurred expenses, related profits and assets utilized throughout the procuring, manufacturing and sales process. Therefore, the fundamental process of inventory valuation entails the identification of the appropriate expenses and profits in the value chain, beginning with the procurement of raw materials and ending with the sale of finished goods.

**Figure 1: Top-down and Bottom-up Methods<sup>2</sup>**



<sup>2</sup> Costs added to adjusted book value should be only incremental costs not already capitalized into book value of inventory.

**12.14** A fundamental premise of this guidance is that the fair value of inventory should be the same regardless of whether it is measured with the top-down or bottom-up method, as noted in FASB ASC 820-10-55-21(f). These methods begin at opposite ends of a continuum starting with the adjusted book value of inventory and ending with customer delivery. A variety of costs are incurred, tangible and intangible assets utilized, and profit earned throughout this continuum. Each of these elements make a defined contribution in creating the value of the inventory that can be divided between efforts that were completed before versus efforts that will be completed after the measurement date (subsequently, this bifurcation is referred to in this Guide as a *functional apportionment*). When using the top-down method, the amounts deducted from the selling price represent the portion of the value that will be contributed post-measurement date and, thus, allocated to the future actions of the market participant buyer. Conversely, amounts not deducted when using the top-down method, would have implicitly been added to the adjusted book value if valuing inventory using the bottom-up method. The consideration of all costs and related profits in the value chain allows the valuation results in both the top-down and bottom-up methods to be similar at any stage of inventory completion (closed form analysis).

**12.15** The discussion in this Guide begins with the estimate of selling price, which is followed by the functional apportionment process to divide each of the elements between the remaining efforts and those that have been incurred prior to the measurement date. As such, the top-down and bottom-up methods are discussed in sync within the functional apportionment process.

**12.16** Historically, the bottom-up method has been used less frequently than the top-down method for valuing finished goods and WIP inventory; however, the value estimated under both methods would generally be the same. If a model is set up as outlined in the following sections of this Guide, the assumptions made for one method have an implicit impact on the other; as a result, there is minimal incremental effort to perform both methods. However, there is no requirement to perform both methods.

**12.17** The top-down and bottom-up methods have elements of all three valuation approaches: cost, market and income. However, the bottom-up method reflects accumulated costs and is, therefore, generally aligned with the replacement cost method under the cost approach. The top-down method is generally aligned with the market approach.

**12.18** The process for valuing finished goods and WIP inventory outlined in this Guide is based on a line-by-line analysis of the income statement, which would result in consistent outcomes under either method.

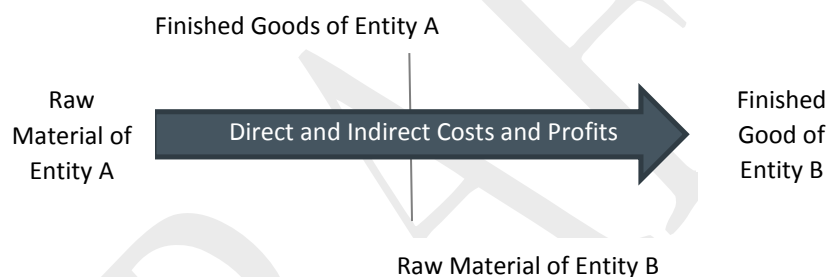
### ***Raw Material Valuation***

**12.19** The fair value of acquired inventory is a function of its stage of production. The fair value of raw materials is the price that would be received in a current sale between market participants.<sup>3</sup>

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<sup>3</sup> For example, assume that copper raw material (that is used in the production process) is acquired as part of a business combination. Its historical cost is \$1.00 per pound and its current fair value is \$1.10 per pound, which is based on the price that a market participant could sell the copper in its principal (or most advantageous) market taking into consideration its current condition and location. In this example, the acquirer should recognize the acquired copper inventories at \$1.10 per pound.

**12.20** Whether an inventory item is classified as a raw material or a finished good may depend on the nature of the business. One entity’s finished good may be another entity’s raw material. Thus, the valuation method(s) selected may vary by entity depending on where the inventory is within its life cycle. The assumptions around the point at which the inventory is sold to a market participant should be consistent with the assumptions around the costs incurred, assets used and value created. The perspective of the market participant buyer should be consistent with the selling price and the cost structure assumptions. Thus, the value of the inventory would not differ based on its classification alone.



**12.21** When estimating fair value, FASB ASC 820-10-05-1C requires that valuation techniques maximize the use of relevant observable inputs and minimize the use of unobservable inputs. Therefore, raw materials inventory<sup>4</sup> is often valued using the bottom-up method, where current replacement cost for a market participant is used, because typically there are fewer subjective assumptions. If there is observable market information, such information should be used to estimate the fair value of raw materials. In practice, the starting point for estimating the fair value of raw materials is often the book value per the acquiree’s financial statements, which should be the lower of cost or net realizable value.<sup>5</sup> It is important to understand how the book value of inventory was derived, including accounting methods and adjustments (such as reserves<sup>6</sup>). Adjustments may need to be considered to update to current cost and account for any additional shrinkage<sup>7</sup> and obsolescence<sup>8</sup> that is not already included in the book value. Book value would typically consider such adjustments but it could differ due to materiality, timing, and other factors.

<sup>4</sup> While the accounting classification may indicate that the inventory is raw materials, there may be unrecorded value-added components in certain manufactured items.

<sup>5</sup> This Guide uses the valuation definition of *net realizable value* (NRV). The FASB ASC Master Glossary defines NRV as “[e]stimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation.” The FASB ASC definition is consistent with the valuation definition except for the treatment of profit allowance, which is not factored in NRV under the FASB ASC definition. For purposes of this Guide, the valuation definition of NRV is used because NRV is discussed in the valuation context and this definition is well understood in the valuation profession.

<sup>6</sup> Reserves may be related to a specific subset of inventories or, if the inventory is homogenous, they may be equally relevant to all inventory. For example, assume there is a gross book value of inventory of \$100; reserve of \$10, and net book value of \$90. If the reserve of \$10 is a general reserve applicable to the overall inventory, net book value of \$90 may be used as a starting point for estimating the fair value of inventory. If the reserve of \$10 is specific to a portion of the inventory, for instance \$30 of the \$100, then the proper starting point for estimating the fair value of inventory to which the specific reserve does not apply would be \$70 and the remaining \$30 (or \$20, net of the reserve) would already be at net realizable value.

<sup>7</sup> Differences between accounting and actual inventory (due to theft, damage, miscounting, incorrect units of measure, evaporation, etc.)

<sup>8</sup> Adjustments to value to capture obsolete, defective and sub-normal goods

Additional adjustments may need to be considered if the book value per the acquiree's financial statements would differ from a market participant. For the purpose of this Guide, the value after such adjustments are considered is subsequently referred to as the *adjusted book value*. Book value is more likely to represent current replacement costs if inventory turns over quickly, prices of raw materials are less volatile and there have been no major change in economic or market conditions. If additional costs have been incurred with respect to the inventory that are not already captured in the adjusted book value, then it would be more appropriate to refer to the bottom-up method described in the "Finished Goods and WIP Valuation" section that follows for additional analysis. However, if no additional costs have been incurred, the adjusted book value would represent the current replacement cost, or fair value of raw materials.

**12.22** The inventory accounting method (e.g. FIFO, LIFO) should be understood to determine if the adjusted book value already reflects current costs or if any adjustments are needed to the adjusted book value to reflect current replacement cost and to understand how any lower of cost or market (or NRV) adjustments have been calculated.

- FIFO assumes a company sells its oldest inventory first.
- LIFO assumes a company sells its newest inventory first.

**12.23** LIFO inventory accounting results in a relatively aged cost base, which is more likely to exhibit a discrepancy from current replacement cost than if FIFO inventory accounting was used. Thus, the book value of raw materials may need to be adjusted to be based on the FIFO method by adding the LIFO reserve.<sup>9</sup> All else equal, in a rising cost environment, valuation of raw materials inventory that is based on LIFO is expected to result in a larger step-up from book value. If the inventory consists of commodity-type items with fluctuating prices, even the FIFO basis book value may need to be adjusted to reflect current replacement costs.

**12.24** In practice, fair value of raw materials may approximate book value as of the measurement date, if the following exists: inventory is at current cost, any additional costs that have been incurred with respect to the inventory are minimal, and the reserves fully account for obsolete and defective goods as well as shrinkage.

### ***Finished Goods and WIP Valuation***

#### ***Selling Price***

**12.25** The selling price should reflect the price a market participant that would purchase the inventory from the reporting entity would in turn receive for selling the subject inventory. Selling prices can be derived directly from observed or listed selling prices on a per unit basis. This analysis may be carried out at the individual product (or SKU) level or at the business unit level as appropriate. Selling prices can also be derived indirectly through a gross margin analysis. In any case, the selling price used in the top-down method should be consistent with the baseline prospective financial information (PFI) used throughout the inventory valuation analysis (discussed further in the "Step 1, *Identify the baseline PFI*," section subsequently in this chapter).

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<sup>9</sup> In certain circumstances, other adjustments may be necessary in addition to adding the LIFO reserve.



**12.26** In general, a gross margin analysis estimates the selling price of the inventory by dividing the adjusted book value of finished goods by one minus the gross profit margin percentage. The gross margin percentage is based on the selected baseline PFI. Other considerations include:

- Since the baseline PFI should be on the same basis as the adjusted book value, the cost method supporting the adjusted book value of finished goods should be consistent with the costs included in COGS.
- In some cases, the PFI may exclude significant components from COGS. For example, COGS may be presented without depreciation in the baseline PFI, if sourced from the deal model, with all depreciation below earnings before interest, taxes, depreciation, and amortization (EBITDA). In this case, the COGS would need to be adjusted to include manufacturing depreciation so that it is on the same basis as the adjusted book value of inventory. In addition, if COGS includes costs that are not capitalized in inventory, then they should be removed from COGS when calculating the gross margin for the selling price or the selling price should be appropriately viewed as net of those costs. The objective is to ensure that the COGS margin used to estimate the selling price and the costs capitalized into inventory are on the same basis.

### *Functional Apportionment*

**12.27** Since inventory turnover is often less than one year, sales of the inventory acquired as of the measurement date will be a subset of a company's future annual sales. Accordingly, an analysis typically begins with identifying a full year of PFI and that information is then converted to the requisite common size percentages (for example, gross margin percentage) for use in the inventory valuation. The following steps identify the appropriate PFI for the inventory valuation and perform the functional apportionment.

Step 1: Identify the baseline PFI.

Step 2: Adjust the baseline PFI to remove expenses benefiting future periods.

Step 3: Bifurcate expenses already incurred from those remaining to be incurred for finished goods.

Step 4: Bifurcate expenses already incurred from those remaining to be incurred to complete the WIP.

Step 5: Evaluate the resulting inventory profit.

**12.28** These five steps are performed for both the top-down and bottom-up methods. As a result, there would generally be information available to implement both methods. An entity may choose to perform both methods concurrently to help assess that all expenses and profits are considered in the analysis; however, there is no requirement to do so.

### *Step 1: Identify the baseline PFI*

**12.29** Appropriate PFI should be identified as the basis to derive the assumptions in the inventory valuation. Because fair value is a market-based measurement, it is important to ensure that the assumptions underlying the selected PFI are consistent with market participant assumptions (subsequent references to *baseline PFI* imply that such PFI is consistent with market participant

assumptions). As a starting point, it may be helpful to consider the acquirer's PFI for the initial projected period when the inventory is expected to be sold; however, adjustments may need to be made to reflect the perspective of a market participant that would purchase the inventory from the reporting entity.

**12.30** Inventory and its related selling price, expenses, and profit are generally a subset of the first year of the PFI following the measurement date (i.e. following the business combination transaction). The assumption being that the annual margins reflected in the first year of the PFI are applicable to the inventory as it provides a measure of the expected income during the year when the inventory will be sold.

**12.31** However, this does not preclude the use of other observable market participant information such as information for prior periods, where (i) the facts and circumstances indicate that it would be a better proxy for the subject inventory; or (ii) the first year of the PFI is not sufficiently detailed. In addition, for businesses where there are seasonal cycles, the baseline PFI should be selected over a comparable seasonal period when the inventory is expected to be sold. If there are significant differences between projected and historical gross margins, this may require additional diligence to achieve a market participant perspective. The acquirer's PFI for similar inventory may be another data point.

**12.32** Consistent with the guidance in FASB ASC 820-10-35-10E(a)(1), if internally developed intangible assets contribute to an increase in the level of profitability for the subject inventory, it is assumed that comparable intangible assets would also be available to a market participant. As such, the return on and of those intangible assets would be included in the total profit margin of the baseline PFI. In Step 5, the profit margin can be allocated based on the assets utilized pre- and post-measurement date. Alternatively, the profit contribution of the intangible asset (earned when the intangible is owned) can be treated as a cost (as if the intangible were licensed). Thus, a hypothetical implied royalty to value that intangible asset can be treated as an expense. Modeling the hypothetical implied royalty helps to ensure that the royalty implied from the intangible valuation is consistent with the profit attributed to those assets in the inventory valuation. Additionally, presenting the benefit from these intangible assets as a cost (rather than part of the profit) provides the ability to make explicit assumptions within the functional apportionment analysis in the subsequent steps. Furthermore, by treating the profit as a cost, there is consistent treatment regardless of whether the intangible is licensed or owned by a market participant. In any case, whether it is treated as a cost or profit, the contribution of the intangible asset to inventory value is the same if consistent assumptions about the functional apportionment of the intangible asset are made (i.e., inclusion of such amounts as a cost or profit should not impact the fair value measurement.) It should be noted that whether such amounts are considered a cost or profit for purposes of the fair value measurement does not impact whether such costs are considered disposal costs or selling costs under FASB ASC 330.

**12.33** If the profit contribution of the intangible asset is treated as a cost, then the royalty rate considered in the intangible asset value would typically include both a return of and return on the asset. As such, there should be no incremental layer of profit attributable to the intangible, above such a royalty rate. In the example in Appendix B, these royalties are treated in a manner consistent with the raw materials portion of COGS and classified as a non-value-added item so no incremental profit is allocated.

### *Step 2: Adjust the baseline PFI to remove expenses benefiting future periods*

**12.34** Expenses in any given period are comprised of period expenses that provide a current economic benefit (“current-benefit expenses”), as well as other expenses that have a future economic benefit (“future-benefit expenses”). Certain period expenses may include investment related costs that should be removed from the baseline PFI as they do not contribute to the current costs of procuring, manufacturing or marketing (disposing) the inventory. Examples of future-benefit expenses include research and development (“R&D”) related to new product development; marketing for a new product; recruiting to increase the size of the workforce; expansion into a new territory; depreciation of an R&D facility dedicated to future research; or restructuring costs. These future-benefit expenses are not required to procure, manufacture, market, or dispose of the current inventory and therefore do not drive the revenue earned in the current period.

**12.35** In addition to the direct operating expenses (such as selling, marketing, procurement, and R&D), a portion of the overhead operating expenses of the business (such as general and administrative expenses (“G&A”), corporate overhead,<sup>10</sup> and depreciation expense) may be related to future-benefit expenses. As an initial starting point, these indirect overhead expenses may be allocated between current and future benefit in proportion to the direct operating expenses. However, other assumptions to apportion the indirect overhead expenses may be appropriate.

**12.36** In practice, expense line items in the baseline PFI can be bifurcated by assigning the percentage related to current versus future benefit. Removing the future-benefit direct and indirect expenses generally improves the margins and normalizes the income base used in the inventory valuation. This results in an “adjusted baseline PFI”. This PFI captures all expenses and profits inherent in the inventory cycle that must be apportioned in this closed form analysis (e.g. all expenses and profits need to be identified as occurring either before or after the measurement date). Consequently, the top-down method would be consistent with the bottom-up method.

### *Step 3: Bifurcate expenses already incurred from those remaining to be incurred for finished goods*

**12.37** Each expense in the inventory cycle should be categorized as having been incurred and, therefore, contributed to the value of the finished goods inventory *or* remaining to be incurred during the disposal process. Each expense line item in the adjusted baseline PFI, whether it is direct or indirect, needs to be apportioned between the incurred expenses or those remaining to be incurred to dispose of the finished goods inventory.

**12.38** Disposal costs generally align themselves with selling and marketing expenses while procurement and manufacturing expenses have typically already been incurred for finished goods inventory. Classifying expenses as procurement, manufacturing, selling or marketing is the beginning of this bifurcation process; however, the specific attributes of each company will dictate

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<sup>10</sup> FASB ASC 330, *Inventory*, which addresses the accounting principles and reporting practices applicable to inventory, indicates that “[t]he primary basis of accounting for inventories is cost.” Since inventory acquired in a business combination is measured at fair value and not at cost, the guidance in FASB ASC 330 is not applicable to estimating fair value of inventory. Specifically, FASB ASC 330 provides explicit guidance on capitalization of certain costs and requires that general and administrative expenses be expensed as incurred. However, those expenses would typically be considered by market participants who seek to recover all costs that are incurred as part of creating inventory and, therefore, would be considered when estimating fair value of inventory.



the category for each of the expenses. Further analysis should be based on the facts and circumstances (and is often unique by industry); however, some expense categories will tend to follow a certain trend. It is likely that maintenance R&D would be fully allocated to the manufacturing effort. However, there could be some instances where R&D expenses might be needed in the selling process, such as technical sales assistance provided by R&D engineers.

**12.39** Current-benefit indirect overhead expenses can be associated with each function and should be analyzed in order to properly bifurcate between those associated with costs incurred versus remaining to be incurred for finished goods. Where appropriate, the expense allocation should also be consistent with the assumptions contained in the valuation of any relevant intangible assets (discussed in greater detail below).

*Step 4: Bifurcate expenses already incurred from those remaining to be incurred to complete the WIP.*

**12.40** The methodology for valuing WIP inventory is the same as that used for finished goods inventory but with an additional deduction for the cost and profit to convert WIP into a finished good. WIP can exist at any point in the continuum between raw material inputs and finished goods. The stage of completion (or percent complete) of WIP inventory is dependent on the timing of: raw material inputs and other inventoriable costs;<sup>11</sup> direct and indirect current-benefit operating expenses; and the utilization of tangible and intangible assets in the completion of a finished good.

**12.41** The WIP analysis is performed on the subset of the adjusted baseline PFI assumed to have been contributed to finished goods in Step 3 of the functional apportionment. These costs can be further bifurcated into the completed portion that relates to the effort of procuring raw materials and manufacturing WIP already incurred pre-measurement date versus those costs that relate to the incremental effort remaining to be incurred for the WIP post-measurement date to bring it to its finished state. The completion costs should account for any remaining effort in connection with transforming the WIP into finished goods.

*Step 5: Evaluate the resulting inventory profit.*

**12.42** The valuation of inventory involves an allocation of profit between the profit earned pre-measurement and the profit to be earned post-measurement. In practice, profit earned may not be proportional to expenses. The following are examples of general considerations for estimating the appropriate inventory profit:

- The materials portion of COGS may not be a value-added cost because it does not contribute any of the profit to the inventory. For example, a car manufacturer's raw materials would include steel, but the burden portion of COGS (labor used in assembly) is the portion that adds value. Therefore, the materials portion of COGS should not be considered in the functional apportionment.
- Intangible assets may be internally developed or licensed from third parties. When intangible assets are licensed, the baseline PFI would include this cost. When intangible

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<sup>11</sup> Inventoriable costs are the costs to purchase or manufacture products which will be resold, plus the costs to get those products in place and ready for sale (e.g. costs of the direct materials, direct labor, freight in, and manufacturing overhead incurred in manufacturing the product).

assets are internally generated, baseline PFI will reflect the incremental profitability of owning the intangible assets. However, whether intangible assets are (or would be) owned or licensed by a market participant, the fair value of the inventory should be the same. As noted in paragraph 12.32, internally developed intangible assets may be modeled as a cost as if they were hypothetically licensed. Regardless of whether intangible assets are owned or licensed, analysis is required to determine whether the intangible assets are part of the procurement/manufacturing process (become an attribute of the inventory) or are related to the selling effort. Intangible assets that are used in procurement, part of the manufacturing process or that are added to the goods are considered a component of the fair value of the finished goods inventory. Whereas intangible assets expected to be utilized as part of the disposal process would be considered selling profit and, therefore, would be excluded from the fair value of the finished goods inventory. For valuing the WIP inventory, a similar assessment would be performed to determine at what point during the inventory continuum the intangible assets contribute value.

There are a number of factors that need to be considered when evaluating intangible assets and how much of their value is added to the inventory during manufacturing versus their use in the disposal of the inventory. One of the more important factors is how the inventory would be marketed by a market participant to its customers – pull vs. push model. In push marketing, the premise is to promote products by pushing them onto customers (for example, bubble gum at the front counter where companies are vying for optimal shelf/location, which requires marketing expense). In pull marketing, the premise is to pull customers to the products (for example, a customer goes to a department store to buy shoes of a particular luxury brand. In this case, although marketing efforts are made to support the brand, no significant retail location or push marketing is required due to the brand recognition inherent in the pull marketing model). Other considerations when evaluating when intangible assets are contributed may include the proportion of commercial value, the amount of marketing spend, whether products are sold through a distributor, level of attrition for customer relationships, and any legal rights associated with the intangible assets. See Question 4 in Appendix C, “Questions and Answers to Illustrate Inventory Valuation,” for further discussion of the pull vs. push concept.

- If these intangible assets are valued separately, the profit associated with the intangible assets should be consistent between the inventory valuation and the intangible valuation. If the profit related to the intangible is reflected in the selection of a royalty rate, then this royalty rate can serve as a proxy for the cost and profit created by utilizing the intangible. If the intangible is valued using the multiperiod excess earnings method (MPEEM), the excess profits derived can also be a source for the profit allocation.
  - An intangible asset may be used in the manufacturing process driving some of the excess profits earned in the sale of inventory over and above a contract manufacturing margin. This type of intangible would generally be fully contributed to finished goods and may be partially contributed to WIP.
  - A marketing intangible such as a company trade name may be utilized in the selling or disposal of the inventory.

- In some cases, the intangible assets may contain several elements, such as a pharmaceutical product intangible asset that is comprised of technology, tradename, relationships and so on. This would require an assessment of how the overall profit related to each element of the intangible asset should be apportioned (that which is attributable to manufacturing the inventory and that which is utilized in the disposal effort).
- The profit accumulated in the bottom-up method plus that deducted in the top-down method should be consistent with the profit in the adjusted baseline PFI.

**12.43** In practice, as discussed in Step 1, the adjusted baseline PFI may be adjusted such that the profit contribution of intangible assets is treated as a cost, and modeled as a hypothetical royalty. As a result, the profit on the costs incurred and costs that remain to be incurred may be an output of the above steps. If the profit contribution of the intangible assets is treated as a cost, then the royalty rate considered in the intangible asset value would typically include both a return of and return on the asset.<sup>12</sup> As such, there should be no incremental layer of profit attributable to the intangible, above such a royalty rate.

#### *Holding (Opportunity) Costs*

**12.44** Holding costs may need to be estimated to account for the opportunity cost associated with the time required for a market participant to sell the inventory. In other words, this represents the foregone return on investment during the time to sell the inventory.

**12.45** When assessing and estimating holding costs that a market participant may consider, there are various factors that should be considered:

- It is important to make sure that they are not already included in the other assumptions in the inventory valuation. If the analysis of disposal costs is based on earnings before taxes (EBT), then interest expense may already be considered directly as part of the disposal cost. Alternatively, if profit allowance is based on earnings before interest, taxes and amortization (EBITA), then it may reflect profit that is used to cover the cost of funding and therefore already accounts for the holding costs.
- A market participant would often consider holding costs in situations where inventory is stored for extended period of time before the point of sale. The inventory valuation would also consider the cost of storage and handling the inventory, or the risk associated with holding the inventory (for example, insurance, shrinkage, obsolesce, etc.)
- To the extent that holding costs are applied to inventory, a reasonable approach is to use a pre-tax financing rate for a period of time consistent with the holding period of inventory. Other adjustments may also be necessary to properly reflect a market participant perspective.

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<sup>12</sup> By removing future benefit expenses, the “return of” is also removed.

### *Finished Goods and WIP Valuation*

**12.46** The functional apportionment of the adjusted baseline PFI described above isolates the respective expenses and profits along the inventory continuum. By converting these amounts to percentages and margins they may then be applied in the valuation of inventory.

- The top-down method would begin with estimating the selling price of the acquired finished goods inventory and then deducting the costs and profits related to the disposal effort based on the percentage of revenue derived above. WIP would include a further reduction for the expenses and profit related to the completion effort.
- The bottom-up method is based on a conversion of the expenses and profit to a percent of COGS. It would then proceed by starting with the adjusted book value of finished goods or WIP and adding the expenses and profit derived based on a percentage of COGS.

The comprehensive inventory example in Appendix B provides detailed calculations of these steps as well as a demonstration of the impact of intangible assets in the profit allocation.

### *Other Issues in Practice*

**12.47** The following discussion elaborates on issues that arise in practice and summarizes how the valuation specialist might consider certain issues in the valuation.

### *Discontinued Inventory*

**12.48** Even if the acquirer has plans to discontinue certain inventory in the future, the objective of the fair value measurement remains the same – it is the price that would be received in a sale of the inventory in its existing condition between market participants at the measurement date. Similar to the measurement of fair value for other inventory, a market participant buyer of discontinued inventory would often be expected to base its purchase price on the amount that it would be able to receive for selling the inventory. In those cases, a top down method is used, and the fair value of the discontinued products is based on the selling price that a market participant would expect to receive for those products as well as the cost and profit association with the disposition of this inventory.

- If market participants would be expected to sell the products in the wholesale or retail market, then fair value should be measured based on the expected selling price achieved by the wholesaler or retailer adjusted for their costs of disposal and an expected profit allowance. Note that these market participant expectations should also be reflected in the PFI used throughout the analysis.
- If, however, market participants would be expected to sell the product in the scrap market,<sup>13</sup> the inventory would be valued using the proceeds expected to be received based on the scrap market prices (i.e. liquidation value).

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<sup>13</sup> Scrap value is the worth of a physical asset's individual components when the asset itself is deemed no longer usable. The individual components (i.e. scrap) are worth something if they can be put to other uses. In some cases, scrap materials may be used as is, or in other cases they may be processed before they can be reused.

- If market participants would only be able to sell the inventory for a de minimis amount (either because market participants would not be able to sell the inventory in any of the markets mentioned above, or because they could not earn an adequate profit), then fair value associated with the inventory would be de minimis.

### Relationship to Other Acquired Assets

**12.49** It is generally expected that market participant assumptions used in the inventory valuation will be consistent with market participant assumptions used in the valuation of other complimentary assets or liabilities used in combination. For example, in an analysis of contract liabilities, assumptions with respect to which costs have current benefit and which costs are value added would generally be consistent with those of the inventory analysis. If assumptions between the proportion of each cost already incurred are the same for contract liabilities as they are for inventory, the resulting profit allowance would be consistent as well.

**12.50** Questions arise as to whether it is appropriate to record both inventory and backlog as separate assets at the acquisition date. The task force has observed that they are often recorded as separate assets since inventory represents the fair value of efforts incurred to date and actual tangible products acquired while backlog represents the anticipated sale of the inventory to a customer. Please see the “Pre-Sold Inventory” section below for additional discussion on the interrelationship between the inventory and backlog valuation models.

**12.51** It is important to avoid double counting of profits associated with inventory. To avoid this double counting, the inventory step-up would need to be deducted from the assets that created value prior to the measurement date. Such assets would be contributed to the inventory prior to the measurement date and, in part, drive the inventory step-up. Thus, the fair value of any intangible asset assumed to have been contributed to inventory should reflect a reduction to avoid a double count. In practice, the assets that contribute to the inventory step up can be more easily identified in the bottom-up method.

- If the customer relationships and trade name are assumed to be intangible assets that create value as the inventory is sold, then that value is included in the intangible assets and is not included in the fair value of the inventory.
- If manufacturing intangible assets are the only assets that are assumed to be contributed prior to the measurement date (not part of the disposal effort), then it would be appropriate to reduce the valuation of the manufacturing IP for the inventory step-up. The step-up would be a reduction to the pre-tax profit for that asset in the period(s) where the inventory is sold, and then the adjusted cash flow would be tax affected and discounted to present value.<sup>14</sup>

**12.52** When performing the weighted average return on assets (“WARA”) analysis, the inventory step-up should also be considered and included as a separate line item. Since the amount of the step-up has been deducted from the asset(s) that contributed to it, the rate of return applied to the step-up should be similar to those assets.

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<sup>14</sup> If the manufacturing IP is valued using an MPEEM, the implied royalty rate would be calculated before deducting the step-up.

### Pre-Sold Inventory and Backlog

**12.53** There is diversity in perspectives about whether pre-sold inventory should be valued higher than unsold inventory. The task force observes the following two positions are used in practice:

- Position for valuing pre-sold inventory higher: Certain selling and marketing costs have already been incurred pre-measurement date and therefore it is not necessary to incur these costs post-measurement date. Under this view, the backlog intangible asset is assumed to have been contributed to inventory and therefore the higher step-up in inventory would be deducted from the backlog customer-based intangible asset.
- Position for valuing pre-sold inventory the same as unsold inventory: Certain inventory is interchangeable with unsold inventory and, therefore, should have the same value. As a result, the pre-sold inventory should be valued assuming the same selling cost as unsold inventory. However the benefit of having pre-sold inventory should be captured in the backlog customer-based intangible asset.

**12.54** Additional considerations around the nature of the pre-sold inventory may also be a factor (for example, whether the orders are cancellable).

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## Appendix A

### *Abbreviated Example of Valuing Finished Goods Inventory*

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**Note:** The example in this appendix is provided only to demonstrate concepts discussed in the “Inventory Valuation” section in chapter 12 and is not intended to establish requirements. Furthermore, the assumptions and inputs used in this example 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.

**A.01** This abbreviated example (which is extracted from the Guide’s comprehensive example) demonstrates certain concepts and the application of the five-step process described previously to finished goods inventory. It includes detailed footnotes describing the underlying assumptions, calculations and allocations.

**A.02** Inventory and its related selling price, expenses, and profit are assumed to be a subset of the first year of the PFI following the transaction. Annual margins are applied to the inventory to provide a measure of the expected income during the year when the inventory will be sold. The factors are applied to the inventory balances present on the measurement date.

**A.03** This schedule contains the five steps as follows:

Step 1: *Identify the baseline PFI.* Column “Year 1” in the first section of the schedule summarizes the selected baseline PFI (the first year of expected operating cash flows) which reflects market participant assumptions.

Step 2: *Adjust the baseline PFI to remove expenses benefiting future periods.* The expenses identified as having a future benefit are shown in the second column labelled “Future Benefit”. The “Current Benefit Year 1” column presents the adjusted PFI and is representative of the period in which the inventory will be sold.

Step 3: *Bifurcate expenses already incurred from those remaining to be incurred for finished goods.* Those expenses considered manufacturing in nature are isolated in the “Incurred: Inventory Attributes” column and the disposal expenses are shown in “Remaining: Disposal Attributes”. Note the sum of these two columns equal the Current Benefit Year 1 column.

Step 4: *Bifurcate expenses already incurred from those remaining to be incurred to complete the WIP.* This step is not required because this example is limited to finished goods.

Step 5: *Evaluate the resulting inventory profit.* The second section of the schedule provides the functional apportionment of the profit as an independent step. The first portion of this section identifies the profit contributed by the respective intangible assets followed by an assessment of the remaining routine profit contributed by other assets of the business. They are in turn categorized as inventory attributes or disposal attributes for use in the respective methods.

**A.04** The third section of the schedule demonstrates both the top-down and bottom-up methods to an assumed \$75 carrying amount of the inventory. Both methods conclude to the same fair value measurement of the inventory (prior to any holding costs). The final portion of the schedule summarizes the total step-up and the portion of that step-up that would be deducted from the respective intangible asset fair values to avoid double counting the profit.

**A.05** The example in Appendix B, “Detailed Example of Valuing Finished Goods and Work-In-Process Inventory,” integrates the functional apportionment of the intangible asset profit (Step 5) into Steps 2-4, while demonstrating the valuation of both finished goods and WIP in greater detail. In addition, this Appendix A example has been based on a comprehensive example, to be included in the complete Business Combinations Guide, that will demonstrate the relationship between the intangible assets and the inventory step-up. Therefore, the amounts and assumptions used in Appendix A differ from those in Appendix B.

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## Fair Value - Finished Goods Inventory

Schedule A

	Year 1 (a)	Future Benefit	Current Benefit Year 1 (d)	Incurred: Inventory Attributes	Remaining: Disposal Attributes
Revenue	\$ 1,000		\$ 1,000	\$ -	\$ 1,000 (h)
Cost of Goods Sold (COGS)	<u>400</u>		<u>400</u>	400 (e)	-
Gross Profit	600		600		
Expenses:					
General & Administrative (G&A)	80	10 (b)	70	49 (f)	21 (f)
Routine Intellectual Property (IP) Development	20	20 (c)	-	-	-
Brand IP Advertising & Promotion	50	-	50	21 (g)	29 (g)
Existing Relationship Selling & Marketing	20	-	20	-	20 (i)
Future Relationship Selling & Marketing	60	60 (c)	-	-	-
Depreciation	<u>94</u>	<u>5</u> (b)	<u>89</u>	<u>71</u> (f)	<u>18</u> (f)
Total Expenses	<u>324</u>	<u>95</u>	<u>229</u>	<u>141</u>	<u>88</u>
Earnings Before Interest and Tax (EBIT)	276		371		
Components of EBIT (Functional Apportionment):					
Routine IP Royalty	3.5% (j)		35	35	-
Brand IP (Underlying IP) Royalty	4.0% (k)		40	40	-
Brand IP (Commercial Value) Royalty	5.5% (l)		55	-	55
Implied Relationship Royalty (Year 1)	18.0% (m)		<u>180</u>	<u>-</u>	<u>180</u>
Intangible Asset Profit Contribution			310	75	235
Routine Profit Contributions:					
COGS			22 (n)	22	-
G&A			15 (n)	11 (o)	4 (o)
Depreciation			<u>24</u> (n)	<u>19</u> (p)	<u>5</u> (p)
Total Routine Profit			<u>61</u> (n)	<u>52</u>	<u>9</u>
EBIT (functional apportionment)			<u>371</u>	<u>127</u>	<u>244</u>
				<u>Bottom-up</u>	<u>Top-down</u>
Revenue					1,000
COGS				400	
Total expenses				141	(88)
EBIT (functional apportionment)				<u>127</u>	<u>(244)</u>
Annual cost and profit attributable to inventory				668	668
Inventory Valuation Factors (q):					
Bottom-up factor (Annual cost and profit attributable to inventory / COGS)				67.0%	
Top-down factor (Annual cost and profit attributable to inventory / Revenue)					66.8%
Carrying amount of inventory (bottom-up)				75.0	
Selling price of inventory (top-down) (r)					187.5
Fair value of finished goods inventory before holding costs (s)				\$ 125.3	\$ 125.3
Total Net Step-up (pre-tax) = fair value before holding costs (125.1) - carrying amount (75.0)				50	
Routine IP royalty: Selling price (187.5) x Routine IP royalty rate (3.5%)				7	
Brand IP royalty: Selling price (187.5) x Brand IP royalty (4%)				8	

**Notes to Schedule A**

- (a) The PFI used in this analysis is sourced from the Comprehensive Example to be included in the overall Business Combinations guide.
- (b) Facts & circumstances will dictate the proportion of G&A and depreciation expenses providing a future benefit. Based on discussions with management, \$10 of the \$80 G&A relates to future activities and 5% of the asset/depreciation base is related to future activities.
- (c) Assumes that 100% of this expense results in future benefits.
- (d) Year 1 PFI less expenses providing a future benefit. The adjusted EBIT is the subject of the functional apportionment below.
- (e) COGS for Year 1 is equivalent to the total book value of inventory to be sold during the period. The costs have been incurred and serve as the basis for the bottom-up method. COGS consists of \$300 of raw materials and \$100 of value added costs.
- (f) Facts & circumstances will dictate the proportion of G&A and depreciation costs incurred versus those remaining. 30% of the G&A expense was determined to be related to the disposal effort based on a functional assessment and discussions with management. 20% of the depreciation was apportioned to the disposal effort based on an estimate of the assets used in each function.
- (g) Brand IP Advertising & Promotion is allocated in proportion to the 4% Brand IP (Underlying IP) Royalty (see footnote k) and the 5.5% Brand IP (Commercial Value) Royalty (see footnote l) as follows:

Incurred: Inventory Attributes =  $\$50 \times [ 4\% / (4\% + 5.5\%) ] = \$21$   
 Remaining: Disposal Attributes =  $\$50 \times [ 5.5\% / (4\% + 5.5\%) ] = \$29$

- (h) Revenue is shown as a disposal item because it is the origin of the top-down method demonstrated in this column.
- (i) Customer related expenses determined to be a disposal expense.
- (j) The Routine IP Royalty of 3.5% is assumed to be for technology that is used in the manufacturing process. Therefore, this portion of the profit has been assigned to the inventory because the Routine IP was used in the manufacturing process.
- (k) The Comprehensive Example will include an analysis that concludes to a 4% royalty applicable to the underlying Brand IP which is considered to be an attribute of the inventory (for the purposes of this inventory example, it is assumed to be a trademark and related branding that have become an attribute of the inventory during the manufacturing process). Therefore, this portion of the profit has been assigned to the inventory.
- (l) The Comprehensive Example will include a simulated royalty analysis for the Brand IP. A 5.5% royalty was deemed appropriate to measure the commercial value of the Brand IP. This commercial value is derived from the excess profits that were created by exploiting, investing in and commercializing the underlying IP. In that this element of value relates to the commercialization of the underlying IP, the 5.5% profit element was assigned to the disposal effort and is not included in the fair value of the inventory.
- (m) In the Comprehensive Example, relationships are valued with the multiperiod excess earnings method (MPEEM). For the purposes of this functional apportionment of the profit, the results of the MPEEM were converted to an implied royalty rate of 18%. The implied royalty should be assessed to determine whether it should be treated as an attribute of the inventory or as a disposal intangible (or both) based on how and when value is added to the inventory. The relationship intangible asset is considered a disposal intangible in this example.
- (n) The total routine profit of \$60 (that was not attributed to an intangible asset) has been apportioned as follows:

	Current Benefit Expense	Allocated Profit	
	Year 1	Profit	
Earnings Before Interest and Tax (EBIT)		371	
less: Intangible Asset Profit Contribution		310	
Total routine profit		61	
Depreciation allocation (see note to right)	89	24	Depreciation allocation based on the pre-tax Return On fixed assets derived from contributory asset charges in the Comprehensive Example.
Routine profit (allocated as follows)		37	
COGS (value added costs, see note e)	100	22	\$37 of remaining routine profit allocated in proportion to the COGS and G&A current benefit expenses.
G&A	70	15	

- (o) Routine profit is allocated in proportion to G&A expense (70% incurred, 30% remaining, see note f).
- (p) Routine profit is allocated in proportion to depreciation expense (80% incurred, 20% remaining, see note f).
- (q) The annual valuation factors represent the ratios of added costs and profit to COGS (book value) in the bottom-up method and the ratio of costs to dispose and profit to revenue in the top-down method. The factors, while equal in this scenario, will vary with the facts and circumstances.
- (r) The selling price of the inventory is based on the gross margin percentage applied to the carrying amount of the inventory.
- (s) Note both methods result in the same fair value measurement. Bottom-up =  $\$75 \times (1 + 67.0\%)$ ; Top-down =  $\$187.5 \times 66.8\%$ .

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## Appendix B

### *Detailed Example of Valuing Finished Goods and Work-In-Process Inventory*

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**Note:** The example in this appendix is provided only to demonstrate concepts discussed in the “Inventory Valuation” section in chapter 12 and is not intended to establish requirements. Furthermore, the assumptions and inputs used in this example 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.

The task force recognizes that this example is very detailed. The purpose of providing such a level of detail is to illustrate the thought process and underlying calculations involved in estimating fair value of inventory and is not intended to reflect documentation requirements. The following example demonstrates one way of performing and documenting the inventory valuation.

**B.01** The “Inventory Valuation” section in chapter 12 provides considerations for estimating the fair value of inventory. This appendix discusses and illustrates how to value finished goods and WIP inventory. This example considers a manufacturing business and is carried throughout this appendix.

**B.02** The functional apportionment of procuring and manufacturing expenses and disposal expenses are covered in five steps.

Step 1: Identify the baseline PFI.

Step 2: Adjust the baseline PFI to remove expenses benefiting future periods.

Step 3: Bifurcate expenses already incurred from those remaining to be incurred for finished goods.

Step 4: Bifurcate expenses already incurred from those remaining to be incurred to complete the WIP.

Step 5: Evaluate the resulting inventory profit.

**B.03** In this example, the relevant identified costs are converted into margins within Steps 2-4. However, if the analysis is performed based on absolute costs (i.e. using dollar amounts as opposed to margins), then the costs would be converted to margins during Step 5, prior to being applied in the inventory valuation.

*Step 1: Identify the baseline PFI.*

**B.04** When valuing inventory, the first step is to identify the baseline PFI. As discussed in the “Inventory Valuation” section in chapter 12, the PFI should represent market participant financials for the initial projected period when the inventory is expected to be sold. Column A in Table 1 below, presents the selected baseline PFI used in this illustrative example.

**B.05** For the purpose of this example, assume that the acquiree owns internally developed intangible assets that contribute to an increase in the level of profitability. Consistent with the guidance in FASB ASC 820-10-35-10E (a)(1), it is assumed that comparable intangible assets would also be available to a market participant. In this step, the profit contribution of the intangible asset (earned when the intangible is owned) has been treated as a cost (as if the intangible were licensed). Thus, the hypothetical implied royalty to value the intangible assets is treated as an expense which ensures that the royalty implied from the intangible valuation is consistent with the profit attributed to those assets in the inventory valuation. Additionally, presenting the benefit from these intangible assets as a cost (rather than part of the profit contribution) provides the ability to make explicit assumptions within the functional apportionment analysis in the subsequent steps. Whether it is defined as a cost or profit, the contribution of the intangible asset to inventory value is the same if consistent assumptions about the functional apportionment of the intangible asset are made. If the intangible was not yet utilized with respect to the inventory, then the cost of disposal would be increased, and this would also result in a lower profit margin allocable between the market participant buyer and market participant seller. The lower profit margin would reflect remaining return on routine assets<sup>1</sup> such as net working capital, fixed assets, assembled workforce, etc.

**B.06** In this example, assume that there are three identifiable intangible assets that contribute value with respect to the inventory: manufacturing IP, trade name, and customer relationships. For purposes of this example, the manufacturing IP is contributed in the production process of the inventory, whereas both the trade name and the customer relationship are considered during the disposal process. Column A' in Table 1 incorporates the benefit of the contributing intangible assets into the selected baseline PFI.

**B.07** There may be certain costs that are not value-added and do not drive profits. For example, the raw materials portion of COGS may be a pass-through cost. Column C in Table 1 makes an assumption about the proportion of each cost that is profit generating. In this example, it is assumed that 65 percent of COGS is raw materials and, therefore, only the 35 percent burden is value-added. Additionally, in this example, it is assumed that the royalty for intangible assets includes both the return of and on the asset, and therefore there is no additional profit earned by the overall company that is attributed to the intangibles. As such, this is modeled as a cost which does not earn profit, or a zero value added cost. These assumptions are used in the subsequent steps.

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<sup>1</sup> A separate section in the Business Combinations Guide (which is not included in this document) describes different types of intangible assets and provides a thought process for selecting the appropriate valuation methods to value them. That guidance distinguishes between pivotal and routine intangible assets. *Pivotal assets* provide an owner or licensee with the ability to create some, or all, of the excess profit in the business unit or value chain. Their functions are not available from alternative sources and have also been referred to as *unique* or *scarce assets*. An iconic brand name is an example of a pivotal asset. *Routine assets*, on the other hand, provide functionality that can be accessed from a third party in an arm's length transaction (IP-based) or the functions and activities provide a routine profit (relationship-based). Internally used software is an example of a routine asset.

**Table 1: Baseline PFI**

Financial Statement Data [1]	A	B	A'	B'	C
	Baseline PFI	% of Revenue	Baseline PFI Including IP	% of Revenue	% of FG Costs That Earn Profit [3]
Revenue	600.0		600.0		
COGS	350.0	58.3%	350.0	58.3%	35.0%
<i>Operating Expenses</i>					
Selling	13.0	2.2%	13.0	2.2%	100.0%
Marketing	15.0	2.5%	15.0	2.5%	100.0%
Procurement / Warehousing	9.0	1.5%	9.0	1.5%	100.0%
R&D	18.0	3.0%	18.0	3.0%	100.0%
Royalty for Manufacturing IP			42.0	7.0%	0.0%
Royalty for Tradename			18.0	3.0%	0.0%
Royalty for Customer Relationships			30.0	5.0%	0.0%
General and Administrative	21.0	3.5%	21.0	3.5%	100.0%
[2] Corporate Allocation	11.0	1.8%	11.0	1.8%	100.0%
Depreciation	13.0	2.2%	13.0	2.2%	100.0%
<b>EBITA</b>	<b>150.0</b>		<b>60.0</b>		
<i>EBITA Margin (EBITA / Revenue)</i>	<i>25.0%</i>		<i>10.0%</i>		
<i>Cost-Based Margin (EBITA / Total Costs)</i>	<i>33.3%</i>		<i>11.1%</i>		

**Notes:**

[1] Blue text represent assumptions while black text represents calculations.

[2] In this example, corporate allocation represents normalized corporate allocation of the market participant buyer's costs post-acquisition.

[3] The raw materials portion of COGS is assumed to be a pass-through cost and therefore does not earn a profit (i.e. the profit-earning portion is based on the burden only).

**Step 2: Adjust the baseline PFI to remove expenses benefiting future periods**

**B.08** After identifying the baseline PFI, the next step is to identify and exclude expenses that only have future economic benefit. Table 2 provides an illustrative example of allocating costs between current and future benefit. In this example, a specific assumption is made for the proportion of direct operating expenses that have current economic benefit. The indirect overhead expenses are then allocated between current and future benefit in proportion to the direct operating expenses.

**B.09** In Table 2, the remaining current benefit EBITA margin reflects residual return above the costs of the business and the royalties associated with intangible assets. This return is associated with items such as fixed assets, working capital, and assembled workforce. This residual return should be assessed based on the assets that drive this return.

**Table 2: Current versus Future Benefit Costs**

Financial Statement Data	A'	B'	D	E = A'*D	F = 1-D	G = A'*F	Direct or Overhead
	Baseline PFI	% of Revenue	Current Benefit %	\$	%	\$	
Revenue	600.0		100%	600.0	0%	-	
[1] COGS	350.0	58.3%	100%	350.0	0%	-	Direct Operating Costs
<i>Operating Expenses</i>							
Selling	13.0	2.2%	100%	13.0	0%	-	Direct Operating Costs
Marketing	15.0	2.5%	75%	11.3	25%	3.8	Direct Operating Costs
Procurement / Warehousing	9.0	1.5%	100%	9.0	0%	-	Direct Operating Costs
R&D	18.0	3.0%	50%	9.0	50%	9.0	Direct Operating Costs
Royalty for Manufacturing IP	42.0	7.0%	100%	42.0	0%	-	Direct Intangible Value
Royalty for Tradename	18.0	3.0%	100%	18.0	0%	-	Direct Intangible Value
Royalty for Customer Relationships	30.0	5.0%	100%	30.0	0%	-	Direct Intangible Value
[3] General and Administrative	21.0	3.5%	93%	19.5	7%	1.5	Overhead Operating Costs
[2,3] Corporate Allocation	11.0	1.8%	93%	10.2	7%	0.8	Overhead Operating Costs
[3] Depreciation	13.0	2.2%	93%	12.1	7%	0.9	Overhead Operating Costs
<b>Total Operating Expense</b>	<b>190.0</b>			<b>174.0</b>		<b>16.0</b>	
<b>EBITA</b>	<b>60.0</b>			<b>76.0</b>		<b>(16.0)</b>	
[4] <i>EBITA Margin (EBITA / Revenue)</i>	<i>10.0%</i>			<i>12.7%</i>			
<i>Cost-Based Margin (EBITA / Total Costs)</i>	<i>11.1%</i>			<i>14.5%</i>			

**Notes:**

[1] The COGS as a percentage of revenue is used in Table 7 to calculate selling price.

[2] In this example, corporate allocation represents normalized corporate allocation of the market participant buyer's costs post-acquisition.

[3] In this example, overhead costs are allocated between current and future benefit in proportion to the following value-added direct costs that earn a profit. The proportion of overhead costs that provide current benefit (93%) is calculated as the total direct current benefit costs that earn profit (\$164.8), divided by the total direct costs that earn a profit (\$177.5), as detailed below.

Direct Operating Costs	A'	E	C (Table 1)	H = E*C	I = A'*C
	Baseline PFI	Current Benefit	% of FG Costs That Earn Profit	Current Benefit Costs That Earn Profit	Costs That Earn a Profit
COGS	350.0	350.0	35%	122.5	122.5
Selling	13.0	13.0	100%	13.0	13.0
Marketing	15.0	11.3	100%	11.3	15.0
Procurement / Warehousing	9.0	9.0	100%	9.0	9.0
R&D	18.0	9.0	100%	9.0	18.0
<b>Total Direct Costs</b>	<b>405.0</b>	<b>392.3</b>		<b>164.8</b>	<b>177.5</b>
				Current Benefit Overhead Costs	93%

[4] After the costs and profit associated with intangibles is modeled as an expense, the remaining current benefit EBITA margin should reflect remaining return on routine assets such as fixed assets, net working capital, assembled workforce, etc.

**Step 3: Bifurcate expenses already incurred from those remaining to be incurred for finished goods.**

**B.10** The analysis in Step 3 is performed on the subset of costs with a current benefit that is calculated in Step 2. Table 3 provides an illustrative example of bifurcating current-benefit expenses into those that are incurred pre-measurement date to procure and manufacture the inventory versus those that are to be incurred post-measurement date to dispose of the finished goods inventory. When bifurcating current-benefit expenses into manufacturing and disposal expenses, the valuation specialist considers two types of expenses: direct operating expenses and overhead expenses.

**B.11** In this example, a specific assumption is made for the proportion of direct operating expenses that have already been incurred for finished goods inventory versus remaining to be incurred during the disposal process. The indirect overhead expenses are then allocated between incurred and remaining in proportion to the direct operating expenses.

**B.12** With respect to the intangible assets, in this example for a manufacturing business, it is assumed that:

- Manufacturing IP is used in the manufacturing process of WIP and therefore all incurred for finished goods.

- Trade name is not considered an attribute of the inventory and is used as a disposal asset at the time the inventory is sold to the customer. [See Appendix C, “Questions and Answers to Illustrate Inventory Valuation,” for more discussion about issues in practice.]
- Customer relationships is considered as a disposal asset, used at the time the inventory is sold to the customer.

**B.13** In this example, the total operating expenses as a percentage of revenue represents the disposal expenses in the top-down method (i.e. 14.9 percent below) and the production and manufacturing cost in the bottom-up method (i.e. 14.1 percent below). These percentages are applied to the selling price in Table 7 for the top-down and in Table 8 for the bottom-up method (boxed in dashed line below) as a means of allocating the operating expenses. However, if the bottom-up method is performed by applying the disposal expense to the adjusted book value, then the operating expense as a percentage of COGS represents the disposal expense (i.e. 24.1 percent, boxed in dashed line below) applied in Table 9.

**Table 3: Finished Goods (“FG”) Costs Incurred vs Remaining**

Financial Statement Data	Bottom-up Method		Top-down Method		Direct or Overhead
	Current Benefit	FG Costs Incurred	FG Costs Remaining		
	E (Table 2)	J	K = E*J	L = 1-J	M = E*L
Total Revenue	600.0				
COGS	350.0	100%	350.0	0%	- Direct Operating Costs
<i>Operating Expenses</i>					
Selling	13.0	0%	-	100%	13.0 Direct Operating Costs
Marketing	11.3	0%	-	100%	11.3 Direct Operating Costs
Procurement / Warehousing	9.0	0%	-	100%	9.0 Direct Operating Costs
R&D	9.0	100%	9.0	0%	- Direct Operating Costs
Royalty for Manufacturing IP	42.0	100%	42.0	0%	- Direct Intangible Value
Royalty for Tradename	18.0	0%	-	100%	18.0 Direct Intangible Value
Royalty for Customer Relationships	30.0	0%	-	100%	30.0 Direct Intangible Value
[1] General and Administrative	19.5	80%	15.6	20%	3.9 Overhead Operating Costs
[1] Corporate Allocation	10.2	80%	8.1	20%	2.1 Overhead Operating Costs
[1] Depreciation	12.1	80%	9.6	20%	2.4 Overhead Operating Costs
<b>TOTAL Operating Expense</b>	<b>174.0</b>		<b>84.3</b>		<b>89.7</b>
<b>EBITA</b>	<b>76.0</b>				
[2] Operating Expenses as % of Total Revenue	29.0%		14.1%		14.9%
[3] Operating Expenses as % of Total COGS			24.1%		

**Notes:**

[1] In this example, the proportion of finished good costs already incurred for overhead operating costs (80%) is calculated as the total finished good cost already incurred for direct costs (\$131.5) divided by the total direct current benefit costs (\$164.8). Note that this differs from the analysis in Table 1 as this analysis is performed on the portion of costs that are current benefit.

Direct Operating Costs	E (Table 2)	K	C (Table 1)	N=K*C	H=E*C
	Current Benefit	FG Costs Incurred	% of FG Costs That Earn Profit	FG Cost Incurred That Earn Profit	Current Benefit Costs That Earn Profit
COGS	350.0	350.0	35%	122.5	122.5
Selling	13.0	-	100%	-	13.0
Marketing	11.3	-	100%	-	11.3
Procurement / Warehousing	9.0	-	100%	-	9.0
R&D	9.0	9.0	100%	9.0	9.0
Royalty for Manufacturing IP	42.0	42.0	0%	-	-
Royalty for Tradename	18.0	-	0%	-	-
Royalty for Customer Relationships	30.0	-	0%	-	-
<b>Total Direct Costs</b>	<b>482.3</b>	<b>401.0</b>		<b>131.5</b>	<b>164.8</b>
				FG Overhead Cost Already Incurred	80%

[2] Finished good cost already incurred % of revenue (14.1%) represents costs already completed for finished goods assumption in bottom-up method, applied to selling price in Table 8. Finished good cost remaining % of revenue (14.9%) represents cost of disposal assumption in top-down method, applied in Table 7.

[3] Finished good cost already incurred % of COGS (24.1%) represents costs already completed for finished goods assumption in bottom-up method. This expense can be applied to the adjusted book value in Table 9.



*Step 4: Bifurcate expenses already incurred from those remaining to be incurred to complete the WIP.*

**B.14** The analysis in Step 4 is performed on the subset of costs that are assumed to have been incurred with respect to finished goods in Step 3. For the WIP analysis, it is necessary to bifurcate current-benefit costs assumed to be incurred pre-measurement date to procure and manufacture the finished goods inventory. These costs can be further bifurcated into the completed portion that relates to the effort of procuring raw materials and manufacturing for the WIP already incurred pre-measurement date versus those costs that relate to the remaining incremental effort to be incurred for the WIP post-measurement date to bring it to the finished state. These costs should include all of the expenditures directly or indirectly remaining to be incurred post-measurement date in bringing the WIP inventory to its finished condition.

**B.15** In practice, the percentage complete may be analyzed individually for each expense line item: COGS, direct and indirect operating costs.

- **COGS:** The efforts remaining to complete are often applicable to the portion which is not related to materials, generally referred to as burden. Burden represents all non-material cost aspects such as running the machines and final testing of products (e.g., direct labor cost and factory overhead). If raw materials are added at the beginning of the manufacturing process, WIP would include the full amount of material cost related to the final product and no additional purchases of materials would be required to complete the WIP. However, if there are any costs associated with additional purchases or components, they should be added to the cost to complete as needed. WIP typically includes only a portion of the burden costs. More burden will be added as part of the remaining manufacturing process, and therefore the remaining burden portion of WIP generally represents the costs to complete COGS.
- The following formula is an example to estimate the percentage complete of COGS.

$$\% \text{ Complete COGS} = \% \text{ Materials} + (\% \text{ Complete} * \% \text{ Burden})$$

Where:

- **% Complete:** proportion of Burden in WIP that is complete
  - **% Materials:** proportion of COGS that represents materials (not Burden)
  - **% Burden:** (1-Materials)/COGS
- **Direct Operating Costs:** There may be direct operating expenses not captured in COGS associated with completing the WIP, such as quality control or some maintenance R&D. In this example, a specific assumption is made for the proportion of direct operating expenses that have been incurred for the WIP inventory versus those remaining to be incurred during the completion process.
  - **Indirect Operating Costs:** A portion of the overhead operating costs of a business should also be allocated to completing the WIP inventory. In this example, the indirect overhead expenses are then allocated between incurred and remaining in proportion to the direct operating expenses.

**B.16** The percentage complete is often difficult to identify in practice due to the complexities in the production process, the tendency of the process to be fast-moving, and the different costs associated with various stages of completion. Given that portions of a



manufacturing entity's WIP may be at various stages of completion at a given time, professional judgment should be applied to develop an appropriate percentage. This example assumes that WIP is 50 percent complete. This assumption is applied to the *burden* portion of COGS.

**B.17** Table 4 provides an illustrative example of bifurcating the expenses associated with procuring raw materials and manufacturing which have already been incurred for finished goods. These costs are bifurcated into the costs that have already been incurred with respect to WIP versus the manufacturing costs that remain to be completed.

- The resulting total remaining COGS and operating expenses as a percentage of revenue represents the cost to complete WIP that needs to be subtracted from the selling price in the top-down method (i.e. 17.2 percent below).
- Since the bottom-up method would add the costs already incurred to the adjusted book value of inventory,<sup>2</sup> the proportion of completed COGS is already accounted for in the adjusted book value. Thus, the completed portion of operating expense represents the cost of procuring raw materials and manufacturing which have already been completed for WIP, and need to be added to the adjusted book value in the bottom-up method (i.e. 7.0 percent below). This percentage would be applied to the selling price. However, if the bottom-up method is performed by applying the WIP costs incurred to the adjusted book value, then the operating expense as a percentage of COGS represents the WIP costs incurred (i.e. 14.6 percent).

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<sup>2</sup> Costs added to the adjusted book value should only include those incremental costs incurred that have not been capitalized into the book value of inventory.

**Table 4: WIP Costs Incurred vs Remaining**

Financial Statement Data	Bottom-up Method		Top-down Method			
	K (Table 3)	O	P = K*O	Q = 1-O	R = Q*K	
	FG Costs Incurred	WIP Costs Already Incurred		WIP Costs Remaining		
		%	\$	%	\$	Direct or Overhead
Total Revenue	600.0					
[1] COGS	350.0	83%	288.8	18%	61.3	Direct Operating Costs
<i>Operating Expenses</i>						
Selling	-	50%	-	50%	-	Direct Operating Costs
Marketing	-	50%	-	50%	-	Direct Operating Costs
Procurement / Warehousing	-	50%	-	50%	-	Direct Operating Costs
R&D	9.0	50%	4.5	50%	4.5	Direct Operating Costs
Royalty for Manufacturing IP	42.0	50%	21.0	50%	21.0	Direct Intangible Value
Royalty for Tradename	-	50%	-	50%	-	Direct Intangible Value
Royalty for Customer Relationships	-	50%	-	50%	-	Direct Intangible Value
[2] General and Administrative	15.6	50%	7.8	50%	7.8	Overhead Operating Costs
[2] Corporate Allocation	8.1	50%	4.1	50%	4.1	Overhead Operating Costs
[2] Depreciation	9.6	50%	4.8	50%	4.8	Overhead Operating Costs
<b>Total Operating Expense</b>	<b>84.3</b>		<b>42.2</b>		<b>42.2</b>	
[3] COGS as a % of Revenue			n/a		10.2%	
<i>Operating Expenses as % of Total Revenue</i>						
[4] Sum			7.0%		7.0%	
[5] Operating Expenses as % of COGS Incurred			14.6%		17.2%	

**Notes:**

[1] The assumption that 83% of COGS are already incurred with respect to WIP is based on assuming all of the materials portion is complete and half of the burden portion is complete (i.e. 82.5% = 65% materials + (50% \* 35% burden)).

[2] In this example, the WIP Cost Already Incurred portion for overhead operating costs (50%) is calculated as the WIP cost already incurred for direct costs that earn a profit (\$65.8) divided by the total direct finished goods costs incurred that earn profit (\$131.5).

Direct Operating Costs	K (Table 3)	P	C (Table 1)	S	T= P*S	N= K*C (Table 3)
	FG Costs Incurred	WIP Costs Already Incurred	% of FG Costs That Earn Profit	% of WIP Incurred that Earn Additional Profit	WIP Costs Incurred that Earn Profit	FG Costs Incurred that Earn Profit
[6] COGS	350.0	288.8	35%	21%	61.3	122.5
Selling	-	-	100%	100%	-	-
Marketing	-	-	100%	100%	-	-
Procurement / Warehousing	-	-	100%	100%	-	-
R&D	9.0	4.5	100%	100%	4.5	9.0
Royalty for Manufacturing IP	42	21	0%	0%	-	-
Royalty for Tradename	-	-	0%	0%	-	-
Royalty for Customer Relationships	-	-	0%	0%	-	-
<b>Total Direct Costs</b>	<b>401.0</b>	<b>314.3</b>			<b>65.8</b>	<b>131.5</b>
					WIP Overhead Cost Already Incurred	50%

[3] The 10.2% represents the COGS left to incur to finish WIP. This will be used to calculate the selling price for WIP in Table 7.

[4] The 7.0% represents costs already completed for WIP assumption in the bottom-up method, applied in Table 8. The 17.2% represents costs to complete WIP assumption in the top-down method, applied in Table 7.

[5] WIP good cost already incurred % of COGS (14.6%) represents costs already completed for WIP assumption in bottom-up method. This expense can be applied to the adjusted book value in Table 9.

[6] The percentage of WIP Costs that earn profit (i.e. 21%) considers only the burden portion of WIP that has been complete, as a percentage of total WIP cost already incurred (i.e. calculated as: 35% burden \* 50% complete / 83% of WIP cost already incurred).

*Step 5: Evaluate the resulting inventory profit.*

**B.18** As discussed in the “Inventory Valuation” section in chapter 12, the valuation of inventory involves an allocation of total profit between that which was earned pre-measurement date and profit to be earned post-measurement date. In any case, the total company profit is consistent with the sum of the profit assumed to be earned post-measurement date in the top-down method and the profit assumed to have been earned pre-measurement date in the bottom-up method.

**B.19** In Step 1 of this example, the profit attributable to internally developed intangible assets is considered. Specific assumptions within the functional apportionment analysis were made regarding the intangible assets that have been utilized with respect to the inventory pre- and post-measurement date. The proportion of each cost that is value-added or profit-generating<sup>3</sup> was also considered. In Step 2, expenses benefiting future periods were removed. As a result, the adjusted profit margin increased. Based on the assumptions in the preceding steps, a profit margin earned pre- and post-measurement date that reflects the relative efforts exerted, risks assumed, value added, costs incurred and assets utilized with respect to the inventory was estimated.

**B.20** Table 5 provides an illustrative example of quantifying the profit margin on each component of costs.

- For the top-down method:
  - the cost-based profit allowance *on selling costs* is calculated as the adjusted EBITA on the profit generating portion of disposal costs divided by the total disposal costs (i.e. 36.8 percent in Table 5 below) and
  - the cost-based profit allowance *on WIP costs to complete* is calculated as the EBITA on the profit generating portion of completion costs remaining to be incurred divided by the total completion costs remaining to be incurred (i.e. 36.8 percent in Table 6 below).
- For the bottom-up method:
  - the cost-based profit allowance *on the costs associated with procuring raw materials and manufacturing* is calculated as the EBITA on the profit generating portion of procuring and manufacturing costs divided by total procuring and manufacturing costs (i.e. 14.0 percent in Table 5 below), and
  - the cost-based profit allowance *on WIP costs already incurred* is calculated as the EBITA on the profit generating portion of WIP costs already incurred divided by total WIP costs already incurred (i.e. 9.2 percent in Table 6 below).

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<sup>3</sup> Since the royalty rate considered in the intangible asset value would typically include both a return of and return on the asset, there is no incremental layer of profit attributable to the intangible, above such a royalty rate. Similarly, the raw materials portion of COGS is assumed to be a pass-through cost and therefore does not earn a profit (i.e. the profit-earning portion is based on the burden only).

**Table 5: Profit Allowance on Profit Generating Finished Goods Costs**

Financial Statement Data	Profit on Finished Goods								
	C (Table 1)		E (Table 2)	U = C*E	K (Table 3)		V = C*K	M (Table 3)	W = C*M
	% of FG Costs That Earn Profit	Total Current Benefit	Current Costs That Earn a Profit	FG Costs Incurred	FG Costs Incurred That Earn a Profit	FG Costs Remaining	FG Costs Remaining	FG Costs Remaining That Earn a Profit	
Revenue		600.0							
COGS	35%	350.0	122.5	350.0	122.5	-	-	-	
Operating Expenses									
Selling	100%	13.0	13.0	-	-	13.0	13.0	13.0	
Marketing	100%	11.3	11.3	-	-	11.3	11.3	11.3	
Procurement / Warehousing	100%	9.0	9.0	-	-	9.0	9.0	9.0	
R&D	100%	9.0	9.0	9.0	9.0	-	-	-	
Royalty for Manufacturing IP	0%	42.0	-	42.0	-	-	-	-	
Royalty for Tradename	0%	18.0	-	-	-	18.0	-	-	
Royalty for Customer Relationships	0%	30.0	-	-	-	30.0	-	-	
General and Administrative	100%	19.5	19.5	15.6	15.6	3.9	3.9	3.9	
Corporate Allocation	100%	10.2	10.2	8.1	8.1	2.1	2.1	2.1	
Depreciation	100%	12.1	12.1	9.6	9.6	2.4	2.4	2.4	
<b>Total Operating Expenses and COGS</b>		<b>524.0</b>	<b>206.5</b>	<b>434.3</b>	<b>164.8</b>	<b>89.7</b>	<b>41.7</b>	<b>15.3</b>	
<b>EBITA</b>		<b>76.0</b>			<b>60.6</b>			<b>15.3</b>	
<i>Cost-Based Margin (EBITA / Total Costs)</i>		14.5%	36.8%		36.8%			36.8%	
<i>EBITA on Costs That Earn a Profit / Sum of Costs</i>					14.0%			17.1%	

**Notes:**

[1] The raw materials portion of COGS is assumed to be a pass-through cost and therefore not a value-added expense. Therefore, the value-added portion of finished goods is calculated as total finished goods costs incurred 350.0 multiplied by the percentage of costs that represents burden 35%.

[2] For columns V, and W, EBITA is calculated as cost-based margin, multiplied by the total costs.

[3] For columns U, V, and W, Cost-based Margin of 36.8% (in column U) is based on the total current benefit EBITA (\$76.0, per column E), divided by the sum of current benefit costs that earn a profit (\$206.5, per column U).

[4] Profit allowance on finished good costs already completed (14.0%, per column V) is calculated as the EBITA for finished good cost that earn a profit which are already incurred (\$60.6, per column V), divided by the total FG cost already incurred (\$434.3, per column K), and is applied in Table 8 and Table 9. Profit allowance on costs to dispose finished goods (17.1%, per column W) is calculated as the EBITA for finished good cost that earn a profit which are remaining (\$15.3, per column W), divided by the total FG cost remaining (\$41.7, per column W), and is applied in Table 7.

**Table 6: Profit Allowance on Profit Generating WIP Costs**

		Profit on WIP					
		Bottom-up			Top Down		
S (Table 4)		X		P (Table 4)	Y = S*P	R (Table 4)	Z=X*R
Financial Statement Data		WIP		WIP		WIP	
		% of Incurred WIP Costs That Earn Profit	% of Remaining WIP Costs That Earn Profit	WIP Costs Already Incurred	Costs Already Incurred That Earn Profit	WIP Costs Remaining	WIP Costs Remaining That Earn Profit
[1]	COGS	21%	100%	288.8	61.3	61.3	61.3
	Operating Expenses						
	Selling	100%	100%	-	-	-	-
	Marketing	100%	100%	-	-	-	-
	Procurement / Warehousing	100%	100%	-	-	-	-
	R&D	100%	100%	4.5	4.5	4.5	4.5
	Royalty for Manufacturing IP	0%	0%	21.0	-	21.0	-
	Royalty for Tradename	0%	0%	-	-	-	-
	Royalty for Customer Relationships	0%	0%	-	-	-	-
	General and Administrative	100%	100%	7.8	7.8	7.8	7.8
	Corporate Allocation	100%	100%	4.1	4.1	4.1	4.1
	Depreciation	100%	100%	4.8	4.8	4.8	4.8
	<b>Total Operating Expenses and COGS</b>			<b>330.9</b>	<b>82.4</b>	<b>103.4</b>	<b>82.4</b>
[2]	EBITA				<b>30.3</b>		<b>30.3</b>
[3]	<i>Cost-Based Margin (EBITA / Total Costs) per Table 5</i>				36.8%		36.8%
[4]	<i>EBITA on Costs That Earn a Profit / Sum of Costs</i>				9.2%		29.3%

**Notes:**

[1] The percentage of WIP Costs that earn profit (i.e. 21%) considers only the burden portion of WIP that has been complete, as a percentage of total WIP cost already incurred (i.e. calculated as: 35% burden \* 50% complete / 83% of WIP cost already incurred).

[2] For columns Y and Z, EBITA is calculated as cost-based margin, multiplied by the total costs.

[3] For columns Y and Z, Cost-based Margin is the same as the assumptions in Table 5 (i.e. the total current benefit EBITA (\$76.0, per column E of Table 5) divided by the sum of current benefit costs that earn a profit (\$206.5, per column U of Table 5).

[4] Profit allowance on WIP costs already completed (9.2%, per column Y) is calculated as the EBITA for finished good cost that earn a profit which are already incurred (\$30.3, per column Y), divided by the total FG cost already incurred (\$330.9, per column P), and is applied in Table 8 and Table 9. Profit allowance on costs to dispose (29.3%, per column Z) is calculated as the EBITA for finished good cost that earn a profit which are remaining (\$30.3, per column Z), divided by the total FG cost remaining (\$82.4, per column Z), and is applied in Table 7.

**Holding (Opportunity) Costs**

**B.21** Steps 1-5 above quantify the inputs to estimate net realizable value (NRV) of inventory, which represents fair value before holding costs. When quantifying holding costs, the key assumptions are the holding period and the cost of funding.

- The holding period may be estimated based on an analysis of historical days inventory outstanding (DIO) for the company and adjusted if it would reasonably be expected to be different for a market participant. Half of the annual DIO would account for mid-period convention, as the inventory is typically sold throughout the holding period not necessarily at the end.

$$DIO = \frac{Inventory}{Cost\ of\ Sales} * 365$$

- The cost of funding (rate of return) applicable to the inventory is generally lower than the overall rate of return for the business (e.g. weighted average cost of capital) and may approximate a market participant's rate of return on net working capital. This rate of return would typically reflect shorter-term financing, largely financed by debt.

**B.22** One method (method A) to account for holding costs is to apply a present value factor to the estimated NRV of inventory. The NRV would be based on the selling price, less costs of

disposal, costs to complete, less profit allowance.<sup>4</sup> Then the fair value of inventory would be based on the following formula:

$$\text{Fair Value of Inventory} = \frac{NRV}{(1 + K_I)^{\left(\frac{DIOs}{365}\right)}}$$

Where:

NRV (\$): Net realizable value of Inventory

K<sub>I</sub> (%): borrowing cost for inventory

DIOs: ½ \* 365 \* Adjusted BV<sub>FG</sub> / Annual COGS

Adjusted BV<sub>FG</sub> (\$): Adjusted book value of finished goods

**B.23** Another method (method B) is to quantify holding costs based on the following formula. This amount would then be subtracted from the selling price. The fair value would be based on the selling price, less costs of disposal, costs to complete, less holding costs, less profit allowance.

$$\text{Holding Costs} = \frac{\text{Adjusted BV}_{FG} * K_I}{\text{Turn}}$$

Where:

K<sub>I</sub> (%): borrowing cost for inventory

Turn: ½ \* Annual COGS / Adjusted BV<sub>FG</sub>

**B.24** Methods A and B would result in slightly different values of holding costs which, in turn, would create slight differences in fair value.

### *Finished Goods and WIP Valuation*

**B.25** Based on the components outlined above, Table 7 and Table 8 provide an illustrative example of the calculation of NRV of inventory, reconciling the top-down and the bottom-up methods. In Table 8, the costs already completed are calculated as a percentage of revenue (presented in boxes in tables above) and applied to the selling price. Table 9 shows an alternative calculation where costs already completed are calculated as a percentage of COGS (boxed in tables above) and applied to the adjusted book value. Either calculation may be used as they result in the same NRV.

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<sup>4</sup> This Guide uses the valuation definition of *net realizable value* (NRV). The FASB ASC Master Glossary defines NRV as “[e]stimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation.” The FASB ASC definition is consistent with the valuation definition except for the treatment of profit allowance, which is not factored in NRV under the FASB ASC definition. For purposes of this Guide, the valuation definition of NRV is used because NRV is discussed in the valuation context and this definition is well understood in the valuation profession.

**Table 7: Top-down Method to Value Finished Goods and WIP<sup>5</sup>**

Inputs / Assumptions	Top Down		Source
	Finished Goods	WIP	
Adjusted Net Book Value	\$110.0	\$55.0	(a)
COGS as a % of Revenue	58.3%	58.3%	(b) Per Table 2
COGS Left to Incur (COGS to Finish WIP)		10.2%	(c) Per Table 4
Costs of Disposal %	14.9%	14.9%	(d) Per Table 3
Costs to Complete %		17.2%	(e) Per Table 4
Profit Allowance on Costs to Dispose %	17.1%	17.1%	(f) Per Table 5
Profit Allowance on Costs to Complete %		29.3%	(g) Per Table 6
<b>Valuation</b>			
Selling Price	\$188.6	\$114.3	(h) = a / (b-c)
Less: Costs of Disposal	\$28.2	\$17.1	(i) = h * d
Less: Costs to Complete		\$19.7	(j) = h * e
Less: Profit Allowance on Costs to Dispose	\$4.8	\$2.9	(k) = f * i
Less: Profit Allowance on Costs to Complete		\$5.8	(l) = g * j
<b>Net Realizable Value</b>	<b>\$155.6</b>	<b>\$68.8</b>	= h-i-j-k-l

**Table 8: Bottom-up Method to Value Finished Goods and WIP (Applied to Selling Price)**

Inputs / Assumptions	Bottom Up		Source
	Finished Goods	WIP	
Selling Price	\$188.6	\$114.3	(a) Per Table 7
Costs Already Completed	14.1%	7.0%	(b) Per Table 3 and 4
Profit Allowance on Costs Already Completed %	14.0%	9.2%	(c) Per Table 5 and 6
<b>Valuation</b>			
Adjusted Net Book Value	\$110.0	\$55.0	(d)
Plus: Costs Already Completed	\$26.5	\$8.0	(e) = a * b
Plus: Profit on Costs Already Completed	\$19.1	\$5.8	(f) = c * (d + e)
<b>Net Realizable Value</b>	<b>\$155.6</b>	<b>\$68.8</b>	= d + e + f

**Table 9: Bottom-up Method to Value Finished Goods and WIP – Alternative Calculation (Applied to Adjusted Book Value)**

Inputs / Assumptions	Bottom Up		Source
	Finished Goods	WIP	
Selling Price	\$188.6	\$114.3	(a) Per Table 7
Costs Already Completed	24.1%	14.6%	(b) Per Table 3 and 4
Profit Allowance on Costs Already Completed %	14.0%	9.2%	(c) Per Table 5 and 6
<b>Valuation</b>			
Adjusted Net Book Value	\$110.0	\$55.0	(d)
Plus: Costs Already Completed	\$26.5	\$8.0	(e) = b * d
Plus: Profit on Costs Already Completed	\$19.1	\$5.8	(f) = c * (d + e)
<b>Net Realizable Value</b>	<b>\$155.6</b>	<b>\$68.8</b>	= d + e + f

**B.26** Fair value would be estimated after applying holding cost to NRV. Table 10 provides an illustrative example of applying holding costs based on methods A and B described previously.

<sup>5</sup> Adjusted book value considers adjustments for LIFO Reserve (if LIFO method used), obsolete and defective goods, and shrinkage.

**Table 10: Estimation of Fair Value (After Holding Costs)**

Inputs / Assumptions	Finished Goods	WIP	Source
[1] Holding Period (days)	57.4	86.0	(a)
Cost of Funding	3.0%	3.0%	(b)
Adjusted Net Book Value	\$110.0	\$55.0	(c) Per Table 7
<b>Valuation (Method A)</b>			
Net Realizable Value	\$155.6	\$68.8	(d) Per Table 7 and 8
Present Value Factor	0.995	0.993	(e) $= 1 / (1 + b)^{(a/365)}$
<b>Fair Value</b>	<b>\$154.8</b>	<b>\$68.3</b>	$= d * e$
<b>Valuation (Method B)</b>			
Net Realizable Value	\$155.6	\$68.8	(d) Per Table 7 and 8
Less: Holding Costs	0.5	0.4	(f) $= c * b / (365/a)$
<b>Fair Value</b>	<b>\$155.1</b>	<b>\$68.4</b>	$= d - f$

Notes:

[1] Holding period accounts for mid period convention. For Finished goods, it is calculated as \$110.0 adjusted net book value of finished goods / \$350.0 COGS \* 365 / 2. Since WIP is assumed to be sold after finished goods, it includes the full finished goods holding period plus \$55.0 adjusted net book value of WIP / \$350.0 COGS \* 365 / 2.

### **Other Issues in Practice Regarding Benefit from Intangible Assets**

**B.27** The following discussion elaborates on issues that arise in practice and summarizes how the valuation specialist might consider them in the valuation.

**B.28** There has been debate regarding whether the fair value of the inventory that would be sold to a market participant that also owns the intangible asset should be consistent with the fair value of the same inventory that would be sold to a market participant that licenses the intangible asset from another party (e.g. a distributor or a contract manufacturer). Specifically, there is diversity in practice whether the benefit of intangible assets used to bring the inventory to its current state of completion should lead to a higher inventory fair value or whether this benefit should be captured in the fair value of the intangible asset.

**B.29** The sections below consider adjustments to the illustrative example described above based on two different scenarios, which consider intangible asset benefit:

- Scenario 1 considers the implication if no specific profit allocation (e.g. through an implied royalty payment) is made regarding intangible assets, and demonstrates that this implicitly assumes that the intangible assets are utilized *throughout* the manufacturing and selling process (i.e. in proportion to all other costs).
- Scenario 2 considers a business where all intangible assets are utilized *at the end* (during the disposition process), demonstrating that the value of the inventory would be the same regardless of whether the market participant owned the intangible asset, licensed it from a third party, or sold non-branded inventory.

#### **Benefit from Intangible Assets: Scenario 1**

**B.30** This scenario first considers the resulting NRV of the finished goods inventory if no specific profit allocation is made to intangible assets. It then demonstrates that this implicitly assumes that the intangible assets are utilized throughout the manufacturing and selling process. Thus, the equivalent functional apportionment assumption would imply that the intangible asset makes contributions in proportion to all other assets of the business (i.e. as assumed for overhead expenses in the main example).



**B.31** Table 11 through Table 13 below present the functional apportionment analysis with no consideration given to intangible assets (i.e. no royalties for intangible assets).

**Table 11: Current vs Future and FG Cost Incurred vs Remaining (without Royalty)**

	Current vs Future Benefit Costs						Finished Goods ("FG") Costs Incurred vs Remaining			
	A	B	C	D = A*C	E = 1-C	F = A*E	Bottom-up Method		Top-down Method	
							G	H = D*G	I = 1-G	J = D*I
Financial Statement Data	Baseline PFI	% of Revenue	Current Benefit %	Future Benefit \$	Future Benefit %	Future Benefit \$	FG Costs Already Incurred %	FG Costs Already Incurred \$	FG Costs Remaining %	FG Costs Remaining \$
Revenue	600.0		100%	600.0	0%	-				
COGS	350.0	58.3%	100%	350.0	0%	-	100%	350.0	0%	-
Operating Expenses										
Selling	13.0	2.2%	100%	13.0	0%	-	0%	-	100%	13.0
Marketing	15.0	2.5%	75%	11.3	25%	3.8	0%	-	100%	11.3
Procurement / Warehousing	9.0	1.5%	100%	9.0	0%	-	0%	-	100%	9.0
R&D	18.0	3.0%	50%	9.0	50%	9.0	100%	9.0	0%	-
Royalty for Intangible	-	0.0%	100%	-	0%	-	100%	-	0%	-
General and Administrative	21.0	3.5%	93%	19.5	7%	1.5	80%	15.6	20%	3.9
Corporate Allocation	11.0	1.8%	93%	10.2	7%	0.8	80%	8.1	20%	2.1
Depreciation	13.0	2.2%	93%	12.1	7%	0.9	80%	9.6	20%	2.4
<b>Total Operating Expense</b>								<b>42.3</b>		<b>41.7</b>
[1] Operating Expenses as % of Total Revenue								7.1%		6.9%

Notes:

[1] Finished good cost already incurred percentage of revenue (7.1%) represents costs already completed for finished goods assumption in the bottom-up method, and is applied in Table 13. Finished good cost remaining percentage of revenue (6.9%) represents cost of disposal assumption in the top-down method, and is applied in Table 13.

**Table 12: Profit Allowance on Profit-Generating Finished Good Costs (without Royalty)**

	Profit on Finished Goods						
	Bottom-up			Top Down			
	K	D (Table 11)	L = K*D	H (Table 11)	M = K*H	J (Table 11)	N = K*J
Financial Statement Data	% of FG Costs That Earn Profit	Total Current Benefit	Current Benefit Value Added	FG Costs Already Incurred	FG Costs Incurred That Earn a Profit	FG Costs Remaining	FG Costs Remaining That Earn a Profit
Revenue		600.0					
COGS	35%	350.0	122.5	350.0	122.5	-	-
Operating Expenses							
Selling	100%	13.0	13.0	-	-	13.0	13.0
Marketing	100%	11.3	11.3	-	-	11.3	11.3
Procurement / Warehousing	100%	9.0	9.0	-	-	9.0	9.0
R&D	100%	9.0	9.0	9.0	9.0	-	-
Royalty for Intangible	0.0%	-	-	-	-	-	-
General and Administrative	100%	19.5	19.5	15.6	15.6	3.9	3.9
Corporate Allocation	100%	10.2	10.2	8.1	8.1	2.1	2.1
Depreciation	100%	12.1	12.1	9.6	9.6	2.4	2.4
<b>Total Operating Expenses and COGS</b>		<b>434.0</b>	<b>206.5</b>	<b>392.3</b>	<b>164.8</b>	<b>41.7</b>	<b>41.7</b>
[1] <b>EBITA</b>		<b>166.0</b>			<b>132.5</b>		<b>33.5</b>
[2] <i>Cost-Based Margin (EBITA / Total Costs)</i>		38.2%	80.4%		80.4%		80.4%
[3] <i>EBITA on Costs That Earn a Profit / Sum of Costs</i>					33.8%		80.4%

Notes:

[1] For columns L, M, and N, EBITA is calculated as cost-based margin, multiplied by the total costs.

[2] For columns L, M, and N, Cost-based Margin is based on the total current benefit EBITA (\$166.0, per column D), divided by the sum of current benefit costs that earn a profit (\$206.5, per column L).

[3] Profit allowance on finished good costs already completed (33.8%, per column M) is calculated as the EBITA for finished good cost that earn a profit which are already incurred (\$132.5, per column M), divided by the sum of FG cost already incurred (\$392.3, per column H). Profit allowance on costs to dispose (80.4%), per column N) is calculated as the EBITA for finished good cost that earn a profit which are remaining (\$33.5, per column N), divided by the sum of FG cost remaining (\$41.7, per column J).

**Table 13: Top-down and Bottom-up Methods for Valuing Finished Goods (without Royalty)**

Inputs / Assumptions	Top Down		Bottom Up	
	Finished Goods		Finished Goods	
Adjusted Book Value	\$110.0	(a)	\$188.6	(e) = a / b
COGS as a % of Revenue	58.3%	(b) Per Table 11	7.1%	(h) Per Table 11
Costs of Disposal %	6.9%	(c) Per Table 11	33.8%	(i) Per Table 12
Profit Allowance on Costs to Dispose %	80.4%	(d) Per Table 12		

Valuation		Valuation			
Selling Price	\$188.6	(e) = a / b	Adjusted Book Value	\$110.0	(j)
Less: Costs of Disposal	\$13.1	(f) = e * c	Plus: Costs Already Completed	\$13.3	(k) = e * h
Less: Profit Allowance on Costs to Dispose	\$10.5	(g) = d * f	Plus: Profit on Costs Already Cor	\$41.6	(l) = i * (j + k)
<b>Net Realizable Value</b>	<b>\$164.9</b>	= e-f-g	<b>Net Realizable Value</b>	<b>\$164.9</b>	= j + k + l

**B.32** Table 14 through Table 16 below incorporate a hypothetical royalty payment, assuming the intangible is utilized throughout the inventory lifecycle and the proportion of the royalty incurred as of the measurement date is the same as the weighted average proportion of all other costs incurred (i.e. the same as the assumption for the overhead operating costs or 80 percent).

**B.33** Under this assumption, the costs of disposal are higher (because they include the royalty) but this is offset by the lower profit margin. The remaining profit margin reflects return on routine assets. Thus, the resulting NRV is consistent with the illustrative example above, where no royalty rate was incorporated. However, it may not always be appropriate to assume that the proportion of the royalty already incurred is the same as other expenses. The main illustrative example in paragraphs B.01–.26 of this section, presents more specific assumptions about when different intangible assets are utilized.

**Table 14: Current vs Future and FG Cost Incurred vs Remaining (Pro-rata Royalty)**

Financial Statement Data	Current vs Future Benefit Costs						Finished Goods ("FG") Costs Incurred vs Remaining					
	A		B		C		D = A*C		E = 1-C		F = A*E	
	Baseline PFI	% of Revenue	Current Benefit %	Future Benefit %	Current Benefit \$	Future Benefit \$	Bottom-up Method %	Bottom-up Method \$	Top-down Method %	Top-down Method \$		
Revenue	600.0		100%		600.0	0%						
COGS	350.0	58.3%	100%		350.0	0%		100%	350.0	0%	-	
Operating Expenses												
Selling	13.0	2.2%	100%		13.0	0%		0%	-	100%	13.0	
Marketing	15.0	2.5%	75%		11.3	25%	3.8	0%	-	100%	11.3	
Procurement / Warehousing	9.0	1.5%	100%		9.0	0%	-	0%	-	100%	9.0	
R&D	18.0	3.0%	50%		9.0	50%	9.0	100%	9.0	0%	-	
Royalty for Intangible	30.0	5.0%	100%		30.0	0%	-	80%	23.9	20%	6.1	
General and Administrative	21.0	3.5%	93%		19.5	7%	1.5	80%	15.6	20%	3.9	
Corporate Allocation	11.0	1.8%	93%		10.2	7%	0.8	80%	8.1	20%	2.1	
Depreciation	13.0	2.2%	93%		12.1	7%	0.9	80%	9.6	20%	2.4	
<b>Total Operating Expense</b>									<b>66.3</b>		<b>47.7</b>	

[1] Operating Expenses as % of Total Revenue

Notes:

[1] Finished good cost already incurred percentage of revenue (11.0%) represents costs already completed for finished goods assumption in the bottom-up method, and is applied in Table 16. Finished good cost remaining percentage of revenue (8.0%) represents cost of disposal assumption in the top-down method, and is applied in Table 16.

**Table 15: Profit Allowance on Profit Generating Finished Good Costs (Pro-rata Royalty)**

Financial Statement Data	N	D (Table 14)	O=N*D	Profit on Finished Goods			
				Bottom-up		Top Down	
				H (Table 14)	P=N*H	J (Table 14)	Q=N*J
	% of FG Costs That Earn Profit	Total Current Benefit	Current Benefit Value Added	FG Costs Already Incurred	FG Costs Incurred That Earn a Profit	FG Costs Remaining	FG Costs Remaining That Earn a Profit
Revenue		600.0					
COGS	35%	350.0	122.5	350.0	122.5	-	-
Operating Expenses							
Selling	100%	13.0	13.0	-	-	13.0	13.0
Marketing	100%	11.3	11.3	-	-	11.3	11.3
Procurement / Warehousing	100%	9.0	9.0	-	-	9.0	9.0
R&D	100%	9.0	9.0	9.0	9.0	-	-
Royalty for Intangible	0.0%	30.0	-	23.9	-	6.1	-
General and Administrative	100%	19.5	19.5	15.6	15.6	3.9	3.9
Corporate Allocation	100%	10.2	10.2	8.1	8.1	2.1	2.1
Depreciation	100%	12.1	12.1	9.6	9.6	2.4	2.4
<b>Total Operating Expenses and COGS</b>		<b>464.0</b>	<b>206.5</b>	<b>416.3</b>	<b>164.8</b>	<b>47.7</b>	<b>41.7</b>
[1] <b>EBITA</b>		<b>136.0</b>			<b>108.5</b>		<b>27.4</b>
[2] <i>Cost-Based Margin (EBITA / Total Costs)</i>		29.3%	65.8%	----->	65.8%	----->	65.8%
[3] <i>EBITA on Costs That Earn a Profit / Sum of Costs</i>					26.1%		57.5%

**Notes:**

[1] For columns O, P, and Q, EBITA is calculated as cost-based margin, multiplied by the total costs.

[2] For columns O, P, and Q, Cost-based Margin is based on the total current benefit EBITA (\$136.0, per column D), divided by the sum of current benefit costs that earn a profit (\$206.5, per column L).

[3] Profit allowance on finished good costs already completed (26.1%, per column P) is calculated as the EBITA for finished good cost that earn a profit which are already incurred (\$108.5, per column P), divided by the sum of FG cost already incurred (\$416.3, per column H). Profit allowance on costs to dispose (57.5%, per column Q) is calculated as the EBITA for finished good cost that earn a profit which are remaining (\$27.4, per column Q), divided by the sum of FG cost remaining (\$47.7, per column J).

**Table 16: Top-down and Bottom-up Methods for Valuing Finished Goods (Pro-rata Royalty)**

Inputs / Assumptions	Top Down		Bottom Up	
	Finished Goods		Finished Goods	
Adjusted Book Value	\$110.0	(a)	\$188.6	(e) = a / b
COGS as a % of Revenue	58.3%	(b) Per Table 14	11.0%	(h) Per Table 14
Costs of Disposal %	8.0%	(c) Per Table 14	26.1%	(i) Per Table 15
Profit Allowance on Costs to Dispose %	57.5%	(d) Per Table 15		
<b>Valuation</b>				
Selling Price	\$188.6	(e) = a / b	Adjusted Book Value	\$110.0 (j)
Less: Costs of Disposal	\$15.0	(f) = e * c	Plus: Costs Already Completed	\$20.8 (k) = e * h
Less: Profit Allowance on Costs to Dispose	\$8.6	(g) = d * f	Plus: Profit on Costs Already Cor	\$34.1 (l) = i * (j + k)
<b>Net Realizable Value</b>	<b>\$164.9</b>	= e - f - g	<b>Net Realizable Value</b>	<b>\$164.9</b> = j + k + l

**B.34** As illustrated above in Table 13 and Table 16, the resulting NRV is the same if no explicit adjustment regarding the intangible asset is made, assuming that the intangible asset is utilized throughout the manufacturing and selling process. The royalty payment incorporated in this scenario represents the profit contribution of the intangible asset. In this example, the same value manifests itself in the inventory valuation either as a cost (through the royalty paid) or in the inventory profit (when the intangible asset is owned). From a bottom-up perspective, a portion of the profit that would be accumulated in the inventory if the intangible asset were owned is simply treated as a cost if it is licensed with no impact on the NRV. The same holds true from a top-down perspective, where a disposal profit (recognized when the intangible asset is owned) is treated as a disposal cost when licensed. This balance exists because NRV is measured on a pretax basis and the contribution of the intangible asset to the inventory value is the same whether it is defined as a cost or profit. Note also that when the intangible asset is licensed, there is no allocation of profit related to the royalty payment as the profit is already included therein.

**B.35** This scenario considers the inventory valuation model without explicitly accounting for intangible assets. The equivalent assumptions of utilizing all intangibles in proportion to all other costs is likely to be different from the functional apportionment of the intangibles, if they were each analyzed explicitly. As illustrated in Table 17 below, the concluded NRV in Scenario 1 differs from the base illustrative example used in this section. The difference may be even more material, depending on the company’s cost structure and the relative size of the intangible assets contributing to manufacturing versus the disposal effort.

**Table 17: Comparison of Base Illustrative Example and Scenario 1**

Concluded Value	Finished Goods
Base Illustrative Example (functional apportionment)	\$155.6 <i>Per Table 7, Table 8, Table 9</i>
Scenario 1 (intangibles used throughout)	\$164.9 <i>Per Table 13, Table 16</i>
<b>Difference</b>	<b>-\$9.30</b>

*Benefit from Intangible Assets: Scenario 2*

**B.36** The purpose of this scenario is to explicitly demonstrate that the value of the inventory would be the same regardless of whether the market participant buyer owned the intangible asset, licensed it from a third party, or sold non-branded inventory. In order to demonstrate this, it is assumed that all intangible assets are utilized *at the end*, during the disposition process. Note that this is a simplifying assumption, but in practice intangible assets are not always entirely utilized during the disposition process.

**B.37** Consider an example where three companies have the same adjusted book value of finished goods inventory and operate in the same business except that:

- Company A has its own brand,
- Company B licenses the brand from a third party at a royalty rate of 5 percent, and
- Company C sells non-branded inventory.

**B.38** For both Company A and B, the brand is utilized during the disposal effort (i.e. the finished goods do not incorporate any attributes of the brand). In the example, Company A and B earn the same revenue, which is a “gross price” that includes the benefit of the brand. The brand is considered a pivotal asset<sup>6</sup> in that it creates excess profit. Company B pays a royalty to a third party to license the brand, reducing its profit margin. In contrast, Company A does not have to pay this royalty and therefore the additional profit falls to the bottom line.

**B.39** Table 18 and Table 19 show the analysis for Company A and B, assuming a 5 percent royalty is paid at the time of disposal. For Company A, the royalty rate modeled in Table 18 and Table 19 is a hypothetical amount while for Company B, the royalty is an actual payment. To simplify this example, the tables below assume that all costs, other than royalty for intangible, are profit generating.

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<sup>6</sup> See footnote 1 in paragraph B.05 for a description of a pivotal asset.

**Table 18: Scenario 2 Company A and B Analysis (with intangible assets)**

	Current vs Future Benefit Costs						Finished Goods ("FG") Costs Incurred vs Remaining			
	A	B	C	D = A*C	E = 1-C	F = A*E	Bottom-up Method		Top-down Method	
							G	H = D*G	I = 1-G	J = D*I
Financial Statement Data	Baseline PFI	% of Revenue	Current Benefit %	Future Benefit \$	Future Benefit %	Future Benefit \$	FG Costs Already Incurred %	FG Costs Already Incurred \$	FG Costs Remaining %	FG Costs Remaining \$
Revenue	600.0		100%	600.0	0%	-				
COGS	350.0	58.3%	100%	350.0	0%	-	100%	350.0	0%	-
Operating Expenses										
Selling	13.0	2.2%	100%	13.0	0%	-	0%	-	100%	13.0
Marketing	15.0	2.5%	75%	11.3	25%	3.8	0%	-	100%	11.3
Procurement / Warehousing	9.0	1.5%	100%	9.0	0%	-	0%	-	100%	9.0
R&D	18.0	3.0%	50%	9.0	50%	9.0	100%	9.0	0%	-
Royalty for Intangible	30.0	5.0%	100%	30.0	0%	-	0%	-	100%	30.0
[1] General and Administrative	21.0	3.5%	97%	20.3	3%	0.7	92%	18.6	8%	1.7
[1] Corporate Allocation	11.0	1.8%	97%	10.7	3%	0.3	92%	9.8	8%	0.9
[1] Depreciation	13.0	2.2%	97%	12.6	3%	0.4	92%	11.5	8%	1.1
<b>Total Direct Operating Costs (excluding Royalty)</b>	<b>405.0</b>			<b>392.3</b>				<b>359.0</b>		
<b>Total Operating Expense (including Royalty)</b>								<b>48.9</b>		<b>66.9</b>
<b>Total Operating Expense (excluding Royalty)</b>										<b>36.9</b>
[2] Operating Expenses as % of Total Revenue									8.1%	11.2%

**Notes:**

[1] In this example, the current benefit proportion for overhead operating costs (97%) is calculated as the total direct current benefit costs (\$392.3), divided by the total direct costs (\$405.0). The proportion of finished good costs already incurred for overhead operating costs (92%) is calculated as the total finished good cost already incurred for direct costs (\$359.0) divided by the total direct current benefit costs (\$392.3).

[2] Finished good cost already incurred percentage of revenue (8.1%) represents costs already completed for finished goods assumption in the bottom-up method. Finished good cost remaining percentage of revenue (11.2%) represents cost of disposal assumption in the top-down method.

**Table 19: Scenario 2 Profit Allowance on Profit Generating Finished Goods Costs**

	Profit on Finished Goods						
	Bottom-up			Top Down			
	K	D (Table 18)	L = K*D	H (Table 18)	M = K*H	J (Table 18)	N = K*J
Financial Statement Data	% of FG Costs That Earn Profit	Total Current Benefit	Current Benefit Value Added	FG Costs Already Incurred	FG Costs Incurred That Earn a Profit	FG Costs Remaining	FG Costs Remaining That Earn a Profit
Revenue		600.0					
COGS	100%	350.0	350.0	350.0	350.0	-	-
Operating Expenses							
Selling	100%	13.0	13.0	-	-	13.0	13.0
Marketing	100%	11.3	11.3	-	-	11.3	11.3
Procurement / Warehousing	100%	9.0	9.0	-	-	9.0	9.0
R&D	100%	9.0	9.0	9.0	9.0	-	-
Royalty for Intangible	0.0%	30.0	-	-	-	30.0	-
General and Administrative	100%	20.3	20.3	18.6	18.6	1.7	1.7
Corporate Allocation	100%	10.7	10.7	9.8	9.8	0.9	0.9
Depreciation	100%	12.6	12.6	11.5	11.5	1.1	1.1
<b>Total Operating Expenses and COGS</b>		<b>465.8</b>	<b>435.8</b>	<b>398.9</b>	<b>398.9</b>	<b>66.9</b>	<b>36.9</b>
[1] <b>EBITA</b>		<b>134.2</b>			<b>122.8</b>		<b>11.4</b>
[2] <i>Cost-Based Margin (EBITA / Total Costs)</i>		28.8%	30.8%		30.8%		30.8%
[3] <i>EBITA on Costs That Earn a Profit / Sum of Costs</i>					30.8%		17.0%

**Notes:**

[1] For columns L, M, and N, EBITA is calculated as cost-based margin, multiplied by the total costs.

[2] For columns L, M, and N, Cost-based Margin is based on the total current benefit EBITA (\$134.2, per column D), divided by the sum of current benefit costs that earn a profit (\$435.8, per column L).

[3] Profit allowance on finished good costs already completed (30.8%, per column M) is calculated as the EBITA for finished good cost that earn a profit which are already incurred (\$122.8, per column M), divided by the sum of FG cost already incurred (\$398.9, per column H). Profit allowance on costs to dispose (17.0%), per column N) is calculated as the EBITA for finished good cost that earn a profit which are remaining (\$11.4, per column N), divided by the sum of FG cost remaining (\$66.9, per column J).

**B.40** In this example, Company C earns a smaller amount of revenue on their non-branded product, but their cost of disposal is also smaller than Companies A and B. Since the brand is considered a pivotal asset, it creates excess profit. Thus, the revenue earned by Company C is smaller than A and B by the royalty payment (i.e. both return on and return of the intangible asset).

**Table 20: Scenario 2 Company C Analysis (Non-Branded)**

Inputs / Assumptions	Source
Royalty	30.0 (a) Per Table 18
EBITA on Costs That Earn a Profit / Sum of Cost:	17.0% (b) Per Table 19
Profit Contribution	35.1 (c) = a * (1+b)
Revenue Company A (Brand Owner)	600.0 (d) Per Table 18
Revenue Company C (Non-Branded)	564.9 (e) = d - c
Total Operating Expense (excluding Royalty)	36.9 (f) Per Table 18
Company C Cost of Disposal (Non-Branded)	6.5% (g) = f / e

**B.41** As summarized in Table 21, this example illustrates that, if all intangible assets are used at the time of disposal, the NRV for inventory is the same for all three companies. In other words, the same value has been created through the manufacturing process for all three companies regardless of whether the company owned the intangible asset, licensed it from a third party, or sold non-branded inventory. However, it may not always be appropriate to assume that intangible assets are used entirely at the time of disposal. If the intangible asset (brand) has created excess profits during the manufacturing process, the value of inventory would still be the same regardless of the fact that it is owned or licensed but would be different from the value of non-branded inventory. The main illustrative example in paragraphs B.01–.26 of this section, presents more specific assumptions about when different intangible assets are used which allows the valuation specialist to make more detailed assumptions.

**Table 21: Scenario 2 Summary**

Inputs / Assumptions	Company A (Brand Owner)	Company B (Brand Licensor)	Company C (Non-Branded)	
Revenue	\$600.0	\$600.0	\$564.9	(a) Per Table 18 & 20
COGS	\$350.0	\$350.0	\$350.0	(b) Per Table 18
Finished Goods Adjusted Book Value	\$110	\$110	\$110	(c)
COGS as a % of Revenue	58.3%	58.3%	62.0%	(d) = b / a
[1] Costs of Disposal % (Excluding Royalty)	11.2%	6.2%	6.5%	(e) Per Table 18 & 20
Costs of Disposal % (Royalty)		5.0%		(f) Per Table 18
Profit Allowance on Costs to Dispose %	17.0%	17.0%	17.0%	(g) Per Table 19

Valuation	Company A (Brand Owner)	Company B (Brand Licensor)	Company C (Non-Branded)	
Selling Price	\$188.6	\$188.6	\$177.5	(h) = c / d
Costs of Disposal	\$21.04	\$11.61	\$11.61	(i) = h * e
Actual Royalty		\$9.43		(j) = h * f
Reasonable Profit Allowance	\$3.6	\$3.6	\$2.0	(k) = g*(i+j)
<b>Net Realizable Value of Finished Goods</b>	<b>\$164.0</b>	<b>\$164.0</b>	<b>\$164.0</b>	=h - i - j - k

Notes:

[1] Costs of disposal % (excluding royalty) for Company B (6.2%) are calculated as the total costs of disposal (11.2%) less royalty for the intangible 5.0%.

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## Appendix C

### *Questions and Answers to Illustrate Inventory Valuation*

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*Note:* The questions and answers in this appendix are provided only to demonstrate concepts discussed in the “Inventory Valuation” section in chapter 12 and are not intended to establish requirements. Furthermore, the assumptions and inputs used in these questions and answers 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.

**C.01** The following questions and answers are intended to illustrate certain concepts related to inventory valuation.

**C.02** *Question 1:* The acquiree is a reseller of various branded goods, including household goods such as beauty products and cosmetics, personal care products, convenience foods, seasonal merchandise, and greeting cards. The acquiree’s products are produced by various manufacturers. The acquirer is a larger publicly traded competitor of the acquiree. In its press release, the acquirer indicated that the primary strategic rationale for the acquisition was due to a strong brand awareness of the acquiree. As such, the acquirer indicated the acquiree will continue to operate under its existing trade name and not be replaced by the acquirer’s trade name. How should the marketing intangible assets of the acquiree be treated in the inventory valuation?

*Answer:* The sole marketing intangible asset of the acquiree consists of its corporate trade name which was considered pivotal to its operations. The acquirer will use the acquiree’s corporate trade name and market participants would similarly be expected to maximize the value of their acquired assets by using them in combination. Thus, when valuing the inventory, the royalty selected in the valuation of the corporate trade name may be included as a disposal cost when performing the top-down method (because the reseller’s brand is utilized during the disposal effort when the inventory is sold to the customer) and not included as a cost incurred in the bottom-up method (because the reseller’s brand is not considered an attribute of the inventory, since the inventory reflects other manufacturers’ brands). The royalty expense can be considered a proxy for the profit on costs associated with the acquired pivotal marketing intangible asset. The task force acknowledges that there may be situations in which the market participant buyer may replace the acquiree’s corporate trade name with its own. In such situations, if the inventory selling price would consider the market participant buyer’s corporate trade name, then the inventory’s exit value will be dependent on the use of an established name in the marketplace. Therefore, it would be appropriate to include a hypothetical royalty expense for the use of that trade name as a disposal cost.

**C.03** *Question 2:* Assume the same company was acquired as in Question 1. When estimating the reasonable profit allowance on disposal costs, is it reasonable to assume that the adjusted profit margin would be proportional to the costs incurred and, therefore, assume the same cost-based profit percentage?

*Answer:* No. Since the value added or profit earned by a reseller is generally driven by its marketing and other selling efforts, it is generally more appropriate to exclude cost of goods sold (i.e. the amount paid by the acquirer for the branded merchandise) from total current benefit expenses and, therefore, the total current benefit EBITA should only be allocated among the expenses of a reseller that creates value (i.e., selling and marketing and allocated overhead). Since the profit associated with the corporate trade name was treated as separate royalty expense, any direct support expenses and associated profit attributed to the corporate trade name should be excluded from the remaining current benefit profit. Remaining profit should be re-allocated among the valued added operating expenses needed to perform routine functions. By excluding COGS as a valued added cost and treating the corporate trade name as intangible asset used in the disposal process, this has the effect of reducing the inventory step-up to appropriately reflect that remaining profit to be earned by a reseller during the selling effort.

**C.04**      *Question 3:* Assume the same company was acquired as in Question 1 except the corporate trade name was considered a routine asset.<sup>1</sup> Are adjustments to the inventory valuation approach required to account for the fact the trade name is now determined to be a routine versus pivotal asset?

*Answer:* Not necessarily, but a profit split assessment when selecting the royalty rate should consider the routine or contributory nature of the trade name. Alternatively, the cost approach may be employed to value the trade name. In this case, the profit can be allocated in proportion to value added operating expenses, including direct support marketing expenses associated with routine corporate trade name.

**C.05**      *Question 4:* The acquirer is a manufacturer of branded goods selling various well-recognized brands, inclusive of designs and logos, through third party retail channels. The acquirer owns most of its brands including all associated trademarks, patents, and designs. For two of its branded products in Europe, the acquirer licenses the trademark and formula from another manufacturer. The acquirer has been highly successful in commercializing these licensed products earning EBIT margins (before the royalty payment) comparable to its owned brands of approximately 20 percent, while only paying a 4 percent royalty for sales in Europe.<sup>2</sup> The 4 percent royalty is also in line with observed license transactions for similar branded goods in the European market. The acquirer credited various advertising and promotion efforts, strong distributor relationships, and manufacturing process-know-how to its success, albeit acknowledged that the manufacturing process is routine and the same process is used by its competitors. How can the marketing intangibles of the acquirer be treated when allocating inventory profit for the fair value measurement of branded product inventory in this circumstance?

*Answer:* The marketing intangible assets of the acquirer consist of its product brands, corporate trade name, and distributor relationships. Its brands and distributor relationships were pivotal to the operations of the acquirer, while the corporate trade name was considered routine in nature. It is assumed that market participants would also have such assets. The valuation specialist valued

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<sup>1</sup> See footnote 1 in paragraph B.05 for a description of a routine asset.

<sup>2</sup> Based on the license agreement, no upfront payment was made. The license agreement expires in four years but the acquirer is confident that it will be renewed for another 10-year term. The 4 percent royalty is determined to be a market rate given the attributes of the agreement.



the brands and the corporate trade name under the relief from royalty method and the distributor relationships using the MPEEM. The simulated royalties for the owned brands and corporate trade name were estimated to be 8 percent<sup>3</sup> and 1 percent, respectively, based on an assessment of comparable license transactions, return on invested capital metrics, and profit split analytics. The implied royalty resulting from the MPEEM for the distributor relationships was 12 percent.<sup>4</sup>

When considering the impact of the marketing intangibles on the fair value of inventory, a functional apportionment of the marketing intangibles was performed. The profit associated with distributor relationships and corporate trade name all related to disposal activities while the profit associated with the brands was split between the value added during manufacturing and disposal activities. The primary consideration of the functional apportionment for the brands was to estimate what percentage of the profits were an attribute of the inventory contributed to the finished goods inventory before the measurement date and what percentage was remaining to be contributed post-measurement date during the disposal process.

When measuring the fair value of the owned branded inventory, in this example a 50/50 functional apportionment<sup>5</sup> of the intangible profit associated with brands was deemed appropriate. The rationale for this assessment was that the commercial value of the brand intangible was a disposal asset required to sell the inventory, whereas the underlying royalty of 4 percent is a measure of the profit related to the brand's design, logo, and associated market recognition which are attributes of the inventory and included in the step-up. In this case, it was determined that the marketing model was a push model consistent with the 12 percent implied royalty for the distributor relationships being a significant component of the overall profit of the entity. Had the implied royalty for the distributor relationships been lower and the overall level of profitability for the market participant been constant, this would have been more consistent with a pull model. This may have resulted in a higher inventory value than would be indicated under a push model because more marketing intangible asset value may be inherent in the inventory.

The licensed brands in Europe do not require a functional apportionment. The 4 percent royalty (the 8 percent simulated royalty minus the actual 4 percent royalty paid<sup>6</sup>) applied to the licensed brands is a measure of the intangible rights asset value of the brands (commercial value) and is entirely attributable to the disposal effort. The cost related to the license payment was treated as an inventoriable item whether the expense appears in cost of goods sold or operating expenses

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<sup>3</sup> The simulated royalty reflects the intangible rights of the Brand IP. It was inclusive of a 4 percent royalty attributable to the underlying IP or brands which was based on the 4 percent royalty being paid in Europe.

<sup>4</sup> Estimated as the implied royalty to make the present value of year 1 cash flows before tax amortization benefit to be zero.

<sup>5</sup> 50% was estimated based on dividing the 8 percent simulated royalty by 4 percent derived by the license agreement (referred to as the underlying royalty). The underlying royalty was considered reasonable through a comparison to observed license transactions. In the inventory valuation, the intangible profit was translated into an expense in the form of a royalty expense.

<sup>6</sup> In this example, the underlying royalty rate of 4 percent was based on similar license agreements that the company has recently entered into for certain brands. The underlying royalty rate assessment for owned brands should be developed under the assumption that the IP would be licensed to a third party and that all investments and efforts to exploit the IP will be performed by the licensee. This rate can be derived from an analysis of comparable license agreements and/or analysis of underlying IP development expenses (whether they be historical or prospective) and an appropriate return that would provide the licensor fair compensation for the functions and risks of such IP.

contributing to the inventory step-up. The acquirer would analyze the royalty arrangement to determine whether an obligation has been incurred to the licensor as of the measurement date for use of licensed brands. If a liability is not recorded, the amount of the license payment is netted against the fair value of the inventory to avoid double counting the impact of the inventory step-up and the license expense on the income statement when the inventory is sold. The task force believes that similar inventory should be valued consistently irrespective of whether the brands are owned or licensed. Note that when the liability is netted against the fair value of inventory, the recognized inventory amount will be different depending on whether IP is owned or licensed.

**C.06**      *Question 5:* The acquiree is in the business of developing, manufacturing and marketing generic pharmaceutical products. For each product, a composite intangible asset is recognized (referred to as *currently marketed product*) that represents the composite value of acquired intellectual property, formularies and distribution rights, FDA approvals, and trade names. How can the benefit of the acquiree's intangible assets be treated in relation to the inventory valuation?

*Answer:* A higher, sometimes significantly higher, fair value of inventory of pharmaceutical products compared to their adjusted book value is generally due to identifiable intangibles. Certain attributes of the composite value manifest themselves in the fair value of the inventory.

In order to allocate the profit earned before and after the measurement date, an implied royalty rate from the intangible asset valuation can be derived. In this example, there was only one identified intangible asset – currently marketed product. An assessment would be required regarding how the implied royalty may be apportioned between the procurement, manufacturing and disposal functions of the inventory. It was determined that the technology (formulas and manufacturing process know-how) portion of the value is utilized during the manufacturing process and is considered an attribute of the inventory, while the trade name and commercial elements of the value are utilized at the time the inventory is sold. A functional apportionment considered various methods to split the implied royalty including observed market royalties for generic pharmaceutical products, which would provide insight into relative contributions of underlying technology and trademarks/trade names for similar intangible assets, a qualitative assessment of differentiating factors driving customer purchasing decisions, as well as a quantitative return on invested capital analysis of historical spend by expense category (e.g., maintenance and new product R&D, advertising and promotion, and selling, etc.).

The task force acknowledges that the assignment of certain elements of the currently marketed product IP as either a manufacturing or disposal function requires judgment. For example, an FDA approval is generally considered to be an authorization to market a drug; however, the clinical trials required for the approval may be considered an attribute of the compound itself and could be considered an attribute of the inventory (part of the manufacturing process).