Exploring Accounting And Reporting Alternatives For The Inventory LCM Procedure: A Teaching Aid

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Abstract

There are many interesting theoretical and practical issues surrounding the application of the lower of cost or market (LCM) procedure in the valuation of inventories. These issues include the mechanics of recording the reduction in inventory value and the presentation of the effect in the financial statements. The purpose of this paper is to explore these issues in greater depth than is typically done in most intermediate accounting textbooks. In addition, an Excel spreadsheet is provided which can be used to help the student understand the issues involved.

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TEACHING AID – EXPLORING ACCOUNTING AND REPORTING ALTERNATIVES FOR THE INVENTORY LCM PROCEDURE

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INTRODUCTION

There are many interesting theoretical and practical issues surrounding the application of the lower of cost or market (LCM) procedure in the valuation of inventories. These issues include the mechanics of recording the reduction in inventory value and the presentation of the effect in the financial statements. The purpose of this paper is to explore these issues in greater depth than is typically done in most intermediate accounting textbooks. In addition, an Excel spreadsheet is provided which can be used to help the student understand the issues involved.

BACKGROUND

Current generally accepted accounting principles (GAAP) require that a company's inventory be valued at the lower of cost or market. A "departure from the cost basis of pricing the inventory is required when the utility of the goods is no longer as great as its cost. Where there is evidence that the utility of goods, in their disposal in the ordinary course of business, will be less than cost, whether due to physical deterioration, obsolescence, changes in price levels, or other causes, the difference should be recognized as a loss of the current period. This is generally accomplished by stating such goods at a lower level, commonly designated as *market*." [Accounting Standards Codification (ASC) 330-10-35-1].

The definition of *market* is in transition. Under the current guidance, which has been in place for many years, market is defined as replacement cost, subject to certain constraints. The measure of market must not exceed the net realizable value of goods, nor be less than net realizable value reduced by the normal profit margin upon sale. [ASC 330-10-35-3 to 35-5] The current guidance is being replaced. In July 2015, the Financial Accounting Standards Board issued Accounting Standards Update (ASU) 2015-11, *Simplifying the Measurement of Inventory*. The new standard redefines market for purposes of the LCM procedure as simply net realizable value. However, the new standard provides an exception for companies using last-in, first-out (LIFO) or the retail inventory method. These companies will continue to define market according to the existing guidance. ASU 2015-11 takes effect in 2017, though early adoption is permitted.

It is safe to say, from this point on, the definition of market will vary across companies. While there are a number of interesting accounting issues in determining the market value of goods, this paper will leave those issues to the intermediate accounting textbooks. Rather, we will explore the accounting issues that arise once the market value is determined. For purposes of this teaching aid, we will use net realizable value as the measure of market.

ISSUES TO BE EXPLORED

While the accounting standards provide guidance on the valuation of inventory, there are a number of issues related to the presentation of the effects of the inventory valuation in the financial statements and the more mundane, but nonetheless important, aspects of recording the

valuations that are not dictated by the standards. Accordingly, various alternative methods have developed in practice. Specifically, the effect of writing down the value of the inventory can be recorded directly in the Inventory account or through the use of an allowance or valuation account. These two alternatives take place on a landscape which already includes a choice of a perpetual inventory system or a periodic inventory system. These alternatives conspire to present the student with a potential confusing array of alternative treatments. This can have the result of taking an issue, which at its core should be accessible, and making it quite troublesome for many students.

Direct Versus Allowance Methods

The accounting standards do not dictate how the underlying events are to be recorded. Two methods have evolved from the standard. Under the *direct* method, the Inventory account is directly reduced by the effect of the loss of value. By comparison, under the *allowance* method, the reduction in inventory from the write-down is recorded in a separate allowance account, acting as a contra-asset. When reported in conjunction with the Inventory account (which maintains its value based upon original historical cost), the resulting valuation is at the lower of cost or market amount.

Perpetual Versus Periodic Inventory Systems

While students have probably been introduced to this topic prior to studying lower of cost or market, it does complicate the students' understanding of the LCM procedure. Briefly, the issue here is whether the Inventory account is perpetually updated as inventory moves in and out of the company's ownership, or whether the Inventory account is updated at year-end through an adjusting entry. This affects how inventory transactions are recorded and therefore affects how the write-down in the value of inventory is recorded.

Income Statement Presentation Issues

Current accounting standards require that a reduction in the value of inventory is recognized as a loss in the year the reduction in value occurs (ASC 330-10-35-2). Many companies will include that loss in cost of goods sold. The effect is, of course, to reduce gross profit (and ultimately) income before income taxes by the amount of the loss. An alternative approach would report the loss as a separate line item below the gross profit line. While both approaches should result in the same net income, the former approach would affect the cost of goods sold and gross profit in absolute values and as percentages of sales revenue. The latter presentation would be facilitated by the use of the allowance method, although not absolutely required.

The current GAAP states it is "desirable" for companies to give separate presentation to a write-down that is considered *substantial and unusual*. [ASU 330-10-50-2] The wording appears to encourage, though not require, companies to separately present a loss from a write-down when the loss is considered substantial and unusual. ASU 2015-11 carries forward this idea, but expresses it as companies "should" (rather than shall) give separate presentation to such a loss. A substantial and unusual loss presumably is at least material, and outside of normal

operations. For purposes of this teaching aid, we will assume any loss is material and arises from the common application of the LCM procedure.

In the year of the initial write-down of the inventory to the lower market value, the income statement is affected as described above. But the income statement is affected in subsequent years as well, adding to potential confusion on behalf of students. Consider the following example. An item of inventory is purchased in July 2014 for $1,000 and ultimately sold in 2015 for $1,100. Assuming for a moment the absence of taxes, this item contributes $100 to the net worth of the company.

But now assume that at December 31, 2014, the inventory item had a net realizable value of $750, and therefore the lower of cost or market valuation was $750. This results in a $250 reduction of net income, again assuming no taxes. The reduction of net income comes about through an increase in cost of goods sold of $250 (thereby reducing gross profit by $250), or reporting a loss from write-down of inventory of $250 below the gross profit line. Either way, net income is reduced by $250.

In 2015, when the item is sold, there will be a $350 positive impact on net income. This will come about by matching the $1,100 sales revenue with the substituted cost of $750 reported in cost of goods sold, thereby increasing the gross profit line by $350 ($1,100 less $750). Or as an alternative presentation, the gross profit line can be increased by $100 ($1,100 sales revenue less the original cost of the item of $1,000) and the item Recovery of Loss from Write-Down of $250 reported separately. Either way, the effect on net income is a positive $350.

Ultimately, the effect on the company's reported net worth is an increase of $100. The 2014 income statement reports a reduction of $250, and the 2015 income statement reports a positive $350, with a net positive effect of $100.

Showing a line item entitled Recovery of Loss from Write-Down may seem inconsistent with the GAAP requirement that once written down, the lower value cannot be written up in the event of a recovery of value. [see ASC 330-10-35-14] But this is not a recognition of the recovery of the value of an inventory item while being held in inventory. Rather, it is consistent parallel treatment of our cost of goods sold and gross profit presentation where cost of goods sold is stated at the original historical cost of goods that were sold during the year and any adjustments related to the decline of inventory value are reported below the gross profit line.

Note on Balance Sheet Presentation

This teaching aid emphasizes income statement presentation issues as there is more potential for variations to arise in the income statement, and the variations are more likely to be of interest to financial statement readers. As discussed in the previous section, the classification of income can vary, impacting the gross profit percentage, a key ratio. The difference in classification of income affects subsequent years as well (through the year in which the goods are sold). Regarding the balance sheet, the reporting there can vary too, but the variation occurs *within* a single classification, current assets. A reader's analysis is not as likely to be affected.

In the discussion of the Excel model that follows, we briefly comment on the two alternatives for balance sheet presentation.

EXCEL SPREADSHEET

The authors have developed a spreadsheet entitled "LCM Excel Model" which allows the student to modify selected variables related to inventory and then see the impact those values have on the income for the company. Panel A, which appears on the first spreadsheet tab, entitled "Data", presents a three-year window and values can be changed for years two and three. The bolded and shaded cells represent the variables that can be changed, through a series of drop-down menus. The values selected are reflected in the remaining panels of the spreadsheet.

LCM Excel Model.xlsx

Panel A - Initial Data

Variables to be Manipulated

	2014	2015	2016
Beginning inventory - cost	150,000	180,000	167,500
Purchases	350,000	**370,000**	**380,000**
Goods sold at original cost	320,000	**382,500**	**365,000**
Ending inventory - cost	180,000	167,500	182,500
Market value	160,000	**140,000**	**170,000**
Balance - Allowance for Inventory Write-Down	20,000	27,500	12,500
Sales	500,000	**515,000**	**550,000**

Panels B and C (on the second tab, labeled "Periodic System"), present the journal entries that would be required for a company using a periodic inventory system. Entries during the year are made to the Purchases account. The year-end adjusting entries are critical to the proper statement of inventory on the year-end balance sheet and proper determination of cost of goods sold on the income statement.

Panel B presents the entries required for the direct method. Using the values in the above illustration as the default, under the direct method, the debit to Inventory to establish the year-

end inventory balance incorporates the lower of the cost or market value ($140,000 at December 31, 2015) (Cell G20). If market is below cost, the lower inventory value forces a higher cost of goods sold value, thus incorporating the loss into the Cost of Goods Sold account. Accordingly, the cost of goods sold of $390,000 for the year ended December 31, 2015 includes the $7,500 additional write-down of inventory required in 2015 (see Cell G21).

Panel C presents the corresponding entries that would be required if the company had elected to use the indirect or allowance method instead. In this case, the debit to Inventory at December 31, 2015 is $167,500, or cost (Cell G69). The resulting debit to Cost of Goods Sold amounts to only $382,500 and does not include the effect of the loss from the write-down (Cell G70). Under the allowance method, a separate adjusting entry is required to adjust the allowance account and recognize either the loss from write-down or the recovery of a previous period's loss (see Cell G76). The total effect on the income for the period is the combined effect of the cost of goods sold and the loss (or recovery of loss).

Panels D and E (on the third tab, labeled "Perpetual System") show the effect of applying the LCM procedure when the company has adopted the perpetual inventory system. In these panels, we use the analysis-of-account format to track the changes to the relevant balance sheet accounts.

Panel D presents the account analysis for the company if it elected to use the direct method. Under this method, the Inventory account is the key account which demonstrates the effect of the lower of cost or market. The Inventory account is debited or increased with the cost of the purchases during the year and is credited or relieved by the cost of the merchandise sold during the year. The entry to credit or relieve the Inventory account is a bit more involved, and it requires further attention. Presumably, a company that uses the direct method in combination with a perpetual system is applying the LCM procedure on an item-by-item basis. For those inventory items where market has dropped below cost, the market value will replace the cost and become the *de facto* cost for future valuations. As inventory is sold, the credit to the Inventory account will be for the carrying value of the goods sold, which will be cost unless the items were written down to a lower market value on a previous balance sheet date. Simply stated, the Inventory account is relieved by the LCM amount for the goods sold, determined from application of the LCM procedure on the most recent balance sheet date (see Cells E8, E12 and E16). Panel D also shows the income effect each year, and Panel D-1 gives the summary journal entries that would be needed over the three-year period.

Panel E provides the same information for the company using the allowance method. Under this set of circumstances, the Inventory account is maintained strictly at cost. A separate allowance account is maintained to track the write-downs, as required, to reflect the lower of cost or market. We use the analysis-of-account format to highlight the activity in the two key accounts, Inventory and Allowance for Inventory Write-Down. The analysis of accounts reveals the two distinct effects on income, the cost of goods sold (based upon the original cost) (see Cells E53, E56 and E59) and the loss from a write-down or the recovery of a loss recognized in previous years (see Cells E65, E67 and E69). The income effects for the three years are summarized at the bottom of Panel E. Panel E-1 presents the summary journal entries that would be required.

FINANCIAL STATEMENT PRESENTATION

As mentioned above, the effect of the write-down of inventory can be incorporated in the Cost of Goods Sold account (and thus reflected in the gross profit) or presented as a separate line item below the gross profit. The reasonable options as far as location below the gross profit appear to include as part of operating expenses or as part of other expenses and losses. Either way, the loss is presented on its own below the gross profit line. For purposes of this teaching aid, we will show the loss, when presented separately, as part of operating expenses.

Panel F of the spreadsheet (on the fourth tab, labeled "Income Statement") presents two sets of comparative income statements. The first set presents the income statements with the effect of the inventory write-downs incorporated in the cost of goods sold line (Cells E9, G9 and I9). The second set breaks out the loss or recovery and presents this item among the operating expenses (Cells E33, G33 and I33). The student can easily see the effect that alternative models have on the relationships reported between sales revenue, cost of goods sold and gross profit. The two sets of income statements also reemphasize that the alternate recording methods have no effect on the net income of the company, as both sets of income statements report the same net income for each of the three years presented.

As far as presentation in the balance sheet, GAAP does not require disclosure of an allowance for write-downs, so the presentation options appear to align closely with a company's choice of the direct method or allowance method. If the company uses the direct method, it will present the Inventory account in the current assets section, with the amount equal to the lower of cost or market valuation. If the company applies the allowance method instead, it likely will present two accounts in the current assets section, Inventory for the cost of goods on hand, and Allowance for Inventory Write-Down for the amount by which market is less than cost at the reporting date. As a slight variation on the latter, a company could show the contra-asset balance parenthetically and the resulting inventory asset for the LCM amount. For all display options, a company would report the same amount for total current assets.

IMPLEMENTATION

One of the authors used this teaching aid in an intermediate accounting course taught during a recent semester. The teaching aid was made available to students as an extra-credit activity. The co-author taught two sections and gave slightly different instructions to each section. In one section, students were asked to find the combination of inputs that produces the largest possible gross profit percentage for 2016. In the other section, the students were asked to find the combination that produces the smallest possible gross profit percentage for 2016. Both sections of students were instructed to submit a screen shot of the comparative income statements showing the highest (or lowest) gross profit percentage for 2016. In addition, they were instructed to submit a short write-up of the key drivers of the high (or low) gross profit percentage. In a course with approximately 400 points available, students could earn up to eight extra-credit points for a correct screen shot and insightful write-up.

CONCLUSION

Many students find the accounting for the lower of cost or market requirement for inventories to be conceptually difficult. One troubling aspect for students is the alternate bookkeeping methods and the effect they have on the financial statements. The authors have developed an Excel spreadsheet which provides the students an opportunity to see the effect of the alternate methods directly. It allows them to modify the variables and immediately see the changes to the summary journal entries and the effect on the comparative income statements.

REFERENCES

Financial Accounting Standards Board. 2015. *Accounting Standards Codification*. FASB: Norwalk, CT.

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