Analysis of Inventories

Inventory: Asset or Expense?

- Inventories normally considered assets held for sale
- Comprised of:
  - Raw materials inventory
  - Work-in-process inventory
  - Finished goods inventory
- Question:
  - Asset or expense?
What’s in Inventory?

- Inventory:
  - Consists of material, labor, and certain overhead items
  - GS&A expenses excluded
    » Period costs
- As an asset, it is a deferred expense
  - Once sold, call it an expense
  - Until then, call it an asset.

COGS Equation

Beginning inventory
+ Production (or purchases)
= Goods available for sale
- Ending inventory
= Cost of goods sold

Note:
*Inventory is the only account that appears on both the balance sheet and the income statement*

Must allocate “goods available for sale” between “ending inventory” and “cost of goods sold”. Choice represents a major accounting issue.
Allocation Choices

- Balance sheet, income statement, and cash flow statement affected by inventory accounting
  - FIFO, LIFO, average
    » FIFO: more correctly states the balance sheet
    » LIFO: more correctly states the income statement
    » Average: between FIFO and LIFO
  - If prices constant, value same.

FIFO versus LIFO

<table>
<thead>
<tr>
<th></th>
<th>FIFO</th>
<th>LIFO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning inventory</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>@ $5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>6,000</td>
<td>6,000</td>
</tr>
<tr>
<td>@ $6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Available for sale</td>
<td>$16,000</td>
<td>$16,000</td>
</tr>
<tr>
<td>- Ending inventory</td>
<td>3,000</td>
<td>2,500</td>
</tr>
<tr>
<td>(500 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Cost of goods sold</td>
<td>$13,000</td>
<td>$13,500</td>
</tr>
</tbody>
</table>
### LIFO/FIFO Example: Increasing Prices

<table>
<thead>
<tr>
<th>Purchases</th>
<th>FIFO Accounting</th>
<th>LIFO Accounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 1</td>
<td>$5</td>
<td>$9</td>
</tr>
<tr>
<td>Day 2</td>
<td>$6</td>
<td>$8</td>
</tr>
<tr>
<td>Day 3</td>
<td>$7</td>
<td>$7</td>
</tr>
<tr>
<td>Day 4</td>
<td>$8</td>
<td>$8</td>
</tr>
<tr>
<td>Day 5</td>
<td>$9</td>
<td>$5</td>
</tr>
</tbody>
</table>

Total sales: 3 units

Prices rising

- **FIFO Accounting**
  - Total cost of sales: $18
  - Ending inventory: $17

- **LIFO Accounting**
  - Total cost of sales: $24
  - Ending inventory: $11

### LIFO/FIFO Example: Falling Prices

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<td>$5</td>
</tr>
<tr>
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<td>$6</td>
</tr>
<tr>
<td>Day 5</td>
<td>$5</td>
<td>$5</td>
</tr>
</tbody>
</table>

Total sales: 3 units

Prices falling

- **FIFO Accounting**
  - Total cost of sales: $18
  - Ending inventory: $17

- **LIFO Accounting**
  - Total cost of sales: $24
  - Ending inventory: $11
**FIFO/LIFO Summary**

- **Period of increasing prices**
  - LIFO produces:
    » Highest cost of sales
    » Lower income taxes/higher cash flow
    » Lowest inventory value in balance sheet
    » Higher turnover ratios

- **Opposite result when prices falling**
- **LIFO cost of sales approximates replacement cost.**

**FIFO/LIFO Summary...**

- **If LIFO used:**
  - For taxes, it must be used for financial reporting — but not vice versa
  - Must show LIFO reserve in the annual report
    » Converts investment to FIFO value
- **Liquidation of LIFO layers can generate profits**
  - Releases lower cost inventory to cost of sales & increases profits.
LIFO Reserve

- Dollar difference between LIFO and FIFO inventory costs
- Change in LIFO reserve
  » Represents the difference between LIFO & FIFO gross margin for the period
  » Level of LIFO reserve represents the cumulative, before-tax difference between LIFO & FIFO income since LIFO adopted.

More Reserve...

- LIFO balance sheet amount + LIFO reserve approximates FIFO balance sheet amount
- Cost of goods sold
  LIFO COGS - increase LIFO reserve
  = FIFO COGS
  LIFO COGS + decrease LIFO reserve
  = FIFO COGS₂
Why is the Reserve Interesting?

- LIFO reserve is the cumulative excess of LIFO COGS over what would have been COGS using FIFO
- Increase in reserve x tax rate = taxes saved this year using LIFO
- Total reserve x rate rate = cumulative tax savings using LIFO.

Example of Benefit ($ millions)

<table>
<thead>
<tr>
<th>Company</th>
<th>’98 LIFO Reserve</th>
<th>Est. Cumulative Tax Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exxon</td>
<td>$2,673</td>
<td>$1,069</td>
</tr>
<tr>
<td>GM</td>
<td>$2,268</td>
<td>$907</td>
</tr>
<tr>
<td>Caterpillar</td>
<td>$2,067</td>
<td>$827</td>
</tr>
<tr>
<td>Ford</td>
<td>$1,397</td>
<td>$559</td>
</tr>
<tr>
<td>GE</td>
<td>$1,098</td>
<td>$439</td>
</tr>
</tbody>
</table>
The End