Equity Analysis and Valuation

CHAPTER 11

CHAPTER
Earnings Persistence

• Earnings persistence is a key to effective equity analysis and valuation
• Analyzing earnings persistence is a main analysis objective
• Attributes of earnings persistence include:
  Stability
  Predictability
  Variability
  Trend
  Earnings management
  Accounting methods

Recasting and Adjusting

Analyze
Earnings Persistence

Recasting and Adjusting

Two common methods to help assess earnings persistence:

- Recasting of income statement
- Adjusting of income statement
### Information for Recasting and Adjusting

- **Income statement, including its subdivisions:**
  - Income from continuing operations
  - Income from discontinued operations
  - Extraordinary gains and losses
  - Cumulative effect of changes in accounting principles
- Other financial statements and notes
- Management commentary in financial statements
- Management’s Discussion and Analysis
- Other: product-mix changes, technological innovations, work stoppages, and raw material constraints
Objectives of Recasting

1. Recast earnings and earnings components so that stable, normal and continuing elements comprising earnings are distinguished and separately analyzed from random, erratic, unusual and nonrecurring elements.

2. Recast elements included in current earnings that should more properly be included in the operating results of one or more prior periods.

Recasting and adjusting earnings also aids in determining earning power.
Earnings Persistence

Recasting and Adjusting

General Recasting Procedures

1. Income statements of several years (typically at least five) are recast
2. Recast earnings components to yield meaningful classifications and a relevant format for analysis
3. Components can be rearranged, subdivided, and tax effected
4. Total recasted components must reconcile to reported net income
Specific Recasting Procedures

- Discretionary expenses are segregated
- Distinct components are segregated (such as equity in income of unconsolidated subsidiaries) and often reported net of tax
- When components of continuing income are separately reclassified, their pre-tax amounts along with their tax effects must be removed
- Income tax disclosures enable one to separate factors that either reduce or increase taxes such as:
  - Deductions—tax credits, capital gains rates, tax-free income, lower foreign tax rates
  - Additions—additional foreign taxes, non-tax-deductible expenses, and state and local taxes (net of federal tax benefit)
### Campbell Soup Company

#### Recast Income Statements ($ mil.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 Net sales</td>
<td>$ 6,204.1</td>
<td>$ 6,205.8</td>
<td>$ 5,672.1</td>
<td>$ 4,868.9</td>
<td>$ 4,490.4</td>
<td>$ 4,286.8</td>
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<tr>
<td>19 Interest income</td>
<td>26.0</td>
<td>17.6</td>
<td>38.3</td>
<td>33.2</td>
<td>29.5</td>
<td>27.4</td>
</tr>
<tr>
<td>Total revenue</td>
<td>$ 6,230.1</td>
<td>$ 6,223.4</td>
<td>$ 5,710.4</td>
<td>$ 4,902.1</td>
<td>$ 4,519.9</td>
<td>$ 4,314.2</td>
</tr>
<tr>
<td>Costs and expenses:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of products sold (see Note 1 below)</td>
<td>$ 3,727.1</td>
<td>$ 3,893.5</td>
<td>$ 3,651.8</td>
<td>$ 3,077.8</td>
<td>$ 2,897.8</td>
<td>$ 2,820.5</td>
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<tr>
<td>Marketing and selling expenses (see Note 2 below)</td>
<td>760.8</td>
<td>605.9</td>
<td>514.2</td>
<td>422.7</td>
<td>363.0</td>
<td></td>
</tr>
<tr>
<td>Advertising (see Note 2 below)</td>
<td>195.4</td>
<td>220.4</td>
<td>212.9</td>
<td>219.1</td>
<td>203.5</td>
<td>181.4</td>
</tr>
<tr>
<td>Repairs and maintenance (see Note 1 below)</td>
<td>173.9</td>
<td>180.6</td>
<td>173.9</td>
<td>155.6</td>
<td>148.8</td>
<td>144.0</td>
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<tr>
<td>Administrative expenses</td>
<td>306.7</td>
<td>290.7</td>
<td>252.1</td>
<td>232.6</td>
<td>213.9</td>
<td>195.9</td>
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<tr>
<td>Research and development expenses</td>
<td>56.3</td>
<td>53.7</td>
<td>47.7</td>
<td>46.9</td>
<td>44.8</td>
<td>42.2</td>
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<tr>
<td>Stock price related incentive programs (see Note 3 below)</td>
<td>15.4</td>
<td>(0.1)</td>
<td>17.4</td>
<td>(2.7)</td>
<td></td>
<td>8.5</td>
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<tr>
<td>Foreign exchange adjustment</td>
<td>0.8</td>
<td>3.3</td>
<td>19.3</td>
<td>16.6</td>
<td>4.8</td>
<td>0.7</td>
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<tr>
<td>Other, net (see Note 3 below)</td>
<td>(3.3)</td>
<td>(2.0)</td>
<td>(1.4)</td>
<td>(4.7)</td>
<td>(0.4)</td>
<td>(9.0)</td>
</tr>
<tr>
<td>Depreciation (see Note 1 below)</td>
<td>194.5</td>
<td>184.1</td>
<td>175.9</td>
<td>162.0</td>
<td>139.0</td>
<td>120.8</td>
</tr>
<tr>
<td>Amortization of intangible and other assets (see Note 3 below)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest expense</td>
<td>116.2</td>
<td>111.6</td>
<td>94.1</td>
<td>53.9</td>
<td>51.7</td>
<td>56.0</td>
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<tr>
<td>Total costs and expenses</td>
<td>$ 5,557.9</td>
<td>$ 5,712.7</td>
<td>$ 5,266.0</td>
<td>$ 4,480.2</td>
<td>$ 4,132.2</td>
<td>$ 3,930.0</td>
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<tr>
<td>Earnings before equity in earnings of affiliates &amp; min. interests</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Equity in earnings of affiliates</td>
<td>2.4</td>
<td>13.5</td>
<td>10.4</td>
<td>6.3</td>
<td>15.1</td>
<td>4.3</td>
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<tr>
<td>Minority interests</td>
<td>(7.2)</td>
<td>(3.7)</td>
<td>(5.3)</td>
<td>(6.3)</td>
<td>(4.7)</td>
<td>(3.9)</td>
</tr>
<tr>
<td>Income before taxes</td>
<td>$ 667.4</td>
<td>$ 518.5</td>
<td>$ 449.5</td>
<td>$ 421.9</td>
<td>$ 398.1</td>
<td>$ 394.8</td>
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<tr>
<td>Income taxes at statutory rate*</td>
<td>(226.9)</td>
<td>(176.3)</td>
<td>(152.8)</td>
<td>(143.5)</td>
<td>(179.1)</td>
<td>(176.9)</td>
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<tr>
<td>Income from continuing operations</td>
<td>$ 440.5</td>
<td>$ 342.2</td>
<td>$ 296.7</td>
<td>$ 278.4</td>
<td>$ 219.0</td>
<td>$ 207.7</td>
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<tr>
<td>State taxes (net of federal tax benefit)</td>
<td>(20.0)</td>
<td>(6.6)</td>
<td>(3.8)</td>
<td>(11.8)</td>
<td>(8.6)</td>
<td>(8.0)</td>
</tr>
<tr>
<td>Investment tax credit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nondeductible amortization of intangibles</td>
<td>(4.0)</td>
<td>(1.6)</td>
<td>(1.2)</td>
<td>(2.6)</td>
<td>(1.4)</td>
<td></td>
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<tr>
<td>Foreign earnings not taxed or taxed at other than statutory rate</td>
<td>2.0</td>
<td>(2.2)</td>
<td>(0.2)</td>
<td>(3.2)</td>
<td>(11.1)</td>
<td>15.2</td>
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<tr>
<td>Other: Tax effects</td>
<td>(17.0)</td>
<td>(2.2)</td>
<td>(0.1)</td>
<td>(3.7)</td>
<td>(7.5)</td>
<td>(4.7)</td>
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<td>Alaska Native Corporation transaction</td>
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<td></td>
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<tr>
<td>Divestitures, restructuring and unusual charges</td>
<td></td>
<td>(339.1)</td>
<td>(343.0)</td>
<td>(40.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax effect of divest., restructuring &amp; unusual charges (Note 4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Continued on next page)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Campbell Soup Company
Recast Income Statements ($ mil.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain on sale of businesses in (Yr 8) and sub. in Yr 7</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>3.1</td>
<td>9.7</td>
</tr>
<tr>
<td>Loss on sale of exercise equipment subsidiary, net of tax</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>(1.7)</td>
</tr>
<tr>
<td>LIFO liquidation gain (see Note 1 below)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.7</td>
<td>2.8</td>
</tr>
<tr>
<td>Income before cumulative effect of accounting change$</td>
<td>401.5</td>
<td>4.4</td>
<td>13.1</td>
<td>241.6</td>
<td>247.3</td>
<td>223.2</td>
</tr>
<tr>
<td>Cumulative effect of accounting change for income taxes</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>32.5</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Net income as reported</td>
<td>$401.5</td>
<td>$4.4</td>
<td>$13.1</td>
<td>$274.1</td>
<td>$247.3</td>
<td>$223.2</td>
</tr>
</tbody>
</table>

14 (Note 1) Cost of products sold

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>$4,095.5</td>
<td>$4,258.2</td>
<td>$4,001.6</td>
<td>$3,392.8</td>
<td>$3,180.5</td>
<td>$3,082.8</td>
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</table>

144 Less: Repair and maintenance expenses

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>(173.9)</td>
<td>(180.6)</td>
<td>(173.9)</td>
<td>(155.6)</td>
<td>(148.8)</td>
<td>(144.0)</td>
</tr>
</tbody>
</table>

162A Less: Depreciation(a)

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>(194.5)</td>
<td>(184.1)</td>
<td>(175.9)</td>
<td>(162.0)</td>
<td>(139.0)</td>
<td>(120.0)</td>
</tr>
</tbody>
</table>

153A Plus: LIFO liquidation gain(b)

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2.6</td>
<td>5.1</td>
</tr>
</tbody>
</table>

$3,727.1 | $3,893.5 | $3,651.8 | $3,077.8 | $2,897.8 | $2,821.4 |

15 (Note 2) Marketing and selling expenses

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>$956.2</td>
<td>$980.5</td>
<td>$818.8</td>
<td>$733.3</td>
<td>$626.2</td>
<td>$544.4</td>
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</tbody>
</table>

145 Less: Advertising

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>(195.4)</td>
<td>(20.4)</td>
<td>(212.9)</td>
<td>(219.1)</td>
<td>(203.5)</td>
<td>(181.4)</td>
</tr>
</tbody>
</table>

$760.8  | $960.1  | $605.9 | $514.2 | $422.7 | $363.0 |

21 (Note 3) Other expenses (income)

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>$26.2</td>
<td>$14.7</td>
<td>$32.4</td>
<td>$(3.2)</td>
<td>$(9.5)</td>
<td>$5.5</td>
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</table>

102 Less: Stock price–related incentive programs

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>(15.4)</td>
<td>0.1</td>
<td>(17.4)</td>
<td>2.7</td>
<td>—</td>
<td>(8.5)</td>
</tr>
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</table>

103 Less: Amortization of intangible and other assets

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>(14.1)</td>
<td>(16.8)</td>
<td>(16.4)</td>
<td>(6.9)</td>
<td>(5.6)</td>
<td>(6.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.7</td>
<td>14.7</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

104 Other, net

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>$(3.3)</td>
<td>$(2.0)</td>
<td>$(1.4)</td>
<td>$(4.7)</td>
<td>$(6.4)</td>
<td>$(9.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>$115.3</td>
<td>$116.6</td>
<td>$16.7</td>
<td>$19.7</td>
<td>$13.9</td>
<td>—</td>
</tr>
</tbody>
</table>

136 Nondeductible divestitures, restructuring, and unusual charges

<table>
<thead>
<tr>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>(101.4)</td>
<td>(51.9)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

$13.9  | $64.7   | $13.9  | —      | —      | —      |

*Statutory federal tax rate is 34% in Year 8 through Year 11, 45% in Year 7, and 46% in Year 6.
†This amount is not disclosed for Year 6.
(a)We assume most depreciation is included in cost of products sold.
(b)LIFO liquidation gain before tax. For example, for Year 8 this is $2.58 million, computed as $1.7/(1 — 0.34).
(c)$339.1 22
   0.34 = $115.3.
(d)$343.0 22
   0.34 = $116.6
(e)$179.4 26
   0.565 136 = $101.4.
(f)$106.5 26
   0.487 136 = $51.9.
Objective of Adjusting

Assign earnings components to periods where they most properly belong

Note: Uses data from recast income statements and any other relevant information
General Adjusting Procedures

All earnings components must be considered
When a component is excluded from the period when reported, then

1. Shift it (net of tax) to the operating results of one or more prior periods, or
2. Spread (average) it over earnings for the period under analysis

Note: Only spread items over prior earnings when they cannot be identified with specific periods
Earnings Persistence

Recasting and Adjusting

Specific (Typical) Adjusting Procedures

• Assign extraordinary and unusual items (net of tax) to applicable years
• Tax benefit of carryforwards normally moved to the loss year
• Costs or benefits from lawsuit settlements moved to relevant prior years
• Gains and losses from disposals of discontinued operations usually relate to operating results of several prior years
• Changes in accounting principles or estimates yield adjustments to all years under analysis to a comparable basis—redistribute “cumulative effect” to the relevant prior years
• Normally include items that increase or decrease equity
## Earnings Persistence

### Recasting and Adjusting

**Campbell Soup Company**  
**Adjusted Income Statements ($ mil.)**

<table>
<thead>
<tr>
<th></th>
<th>Year 11</th>
<th>Year 10</th>
<th>Year 9</th>
<th>Year 8</th>
<th>Year 7</th>
<th>Year 6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net income as reported</td>
<td>$401.5</td>
<td>$4.4</td>
<td>$13.1</td>
<td>$274.1</td>
<td>$247.3</td>
<td>$223.2</td>
<td>$1,163.6</td>
</tr>
<tr>
<td>Divestitures, restructuring &amp; unusual charges</td>
<td>339.1</td>
<td>343.0</td>
<td>40.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax effect of divestitures, restructuring, etc.</td>
<td>(13.9)</td>
<td>(64.7)</td>
<td>(13.9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gain on sale of businesses (Yr 8) and sale of subsidiary (Yr 7), net of tax</td>
<td>(3.1)</td>
<td>(9.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss on sale of exercise equipment subsidiary</td>
<td></td>
<td></td>
<td></td>
<td>1.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANC transaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(4.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIFO liquidation gain</td>
<td></td>
<td>(1.7)</td>
<td>(2.8)</td>
<td>(1.4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative effect of change in acctg for taxes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(32.5)</td>
<td></td>
</tr>
<tr>
<td>Adjusted net income</td>
<td>$401.5</td>
<td>$329.6</td>
<td>$291.4</td>
<td>$263.5</td>
<td>$232.0</td>
<td>$221.8</td>
<td></td>
</tr>
<tr>
<td>Total net income for the period</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$1,739.8</td>
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<tr>
<td>Average earnings for the period</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$289.97</td>
</tr>
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</table>
Earnings Persistence

Determinants of Persistence

Earnings persistence determined by many factors including:

- Earnings variability
- Earnings trend
- Earnings stability
- Earnings predictability
- Earnings Management
- Management Incentives

Note: Assess earnings persistence over both the business cycle and the long term
Earnings Persistence

Measuring Persistence

Earnings variability can be measured:

1. Standard variability measures

2. Average earnings--typically using 5 to 10 years of data

3. Minimum earnings--typically selected from the most recent business cycle, reflecting a worst-case scenario
Earnings Persistence

Measuring Persistence

Earnings Trend can be measured:

1. Statistical methods
2. Trend statements (such as Index numbers)
Earnings Persistence

Earnings Management is reflected as follows:

- Changes in accounting methods or assumptions
- Offsetting extraordinary/unusual gains and losses
- Big baths
- Write-downs
- Timing revenue and expense recognition
- Aggressive accounting applications
Management Incentives affecting persistence include:

- Personal objectives and interests
- Companies in distress
- Prosperous companies—preserving hard-earned reputations
- Compensation plans
- Accounting-based incentives and constraints
- Analysts targets
Earnings persistence of components depends on key attributes:

- Recurring vs Non-recurring
- Operating vs Non-operating

Key application of these attributes is the reporting of

- Extraordinary vs Non-extraordinary
Earnings Persistence

Measuring Persistence

Analyzing and Interpreting Extraordinary Items

1. Determine whether an item is extraordinary (less persistent) or not
2. Assessing whether an item is unusual, non-operating, or non-recurring
3. Determine adjustments necessary given assessment of persistence
Earning Persistence

Measuring Persistence

Three broad categories:

1. Nonrecurring operating gains and losses
   - Usually include in current operating income

2. Recurring non-operating gains and losses
   - Consider inclusion in current operating earnings

3. Nonrecurring non-operating gains and losses
   - Omitted from operating earnings of a single year
Earning-Based Valuation

Stock Prices and Accounting Data

\[ V_t = BV_t + \frac{E(RI_{t+1})}{(1 + k)^1} + \frac{E(RI_{t+2})}{(1 + k)^2} + \frac{E(RI_{t+3})}{(1 + k)^3} + \cdots \]

Equity value \((V_t)\)
Book value \((BV_t)\)
Residual Income \((RI_t = Net income_t - k \times BV_{t-1})\)
Cost of equity capital \((k)\)
Earning-Based Valuation

Valuation Multiples

Price-to-Book (PB)

\[
\frac{\text{Market value of equity}}{\text{Book value of equity}}
\]
Earning-Based Valuation

Valuation Multiples

Price-to-Book (PB) expressed in accounting data

\[
\frac{V_t}{BV_t} = 1 + \left[ \frac{(ROCE_{t+1} - k)}{(1 + k)} \right] + \left[ \frac{(ROCE_{t+2} - k)}{(1 + k)^2} \times \frac{BV_{t+1}}{BV_t} \right] + \left[ \frac{(ROCE_{t+3} - k)}{(1 + k)^3} \times \frac{BV_{t+2}}{BV_t} \right] + \ldots
\]

Note

- ROCE and growth in book value increase \( \rightarrow \) PB increases
- Cost (risk) of equity capital increases \( \rightarrow \) PB decreases
- Present value of future abnormal earnings is positive (negative) \( \rightarrow \) PB is greater (less) than 1.0
Earning-Based Valuation

Valuation Multiples

Price-to-Earnings (PE)

Market value of equity

Net income
Earning-Based Valuation

Valuation Multiples

Price-to-Earnings (PE) expressed in accounting data

\[
\frac{P_t}{\text{eps}_t} = \frac{1}{k} + \frac{\text{STG} - \text{LTG}}{k - \text{LTG}}
\]

Where k is the cost of equity capital, STG (LTG) is the expected short-term (long-term) % change in eps relative to expected “normal” growth (STG>LTG and LTG>k)

• The PE is inversely related to k
• The PE is positively related to the expected growth in eps relative to normal growth.
Earning-Based Valuation

Valuation Multiples- PEG Ratio

If $LTG=0$ (long-term growth in eps relative to “normal” growth is expected to remain constant)

\[
\frac{P_t}{\text{eps}_t} \frac{\text{STG}}{k^2}
\]

This yields the popular PEG ratio.

Example: If $PE=20$ and $k=10\%$, proponents of this screening device recommend stock purchase (sale) if the expected eps growth is greater (less) than 20\%.
Earning-Based Valuation

Christy Co. book value of equity at January 1, Year 1, is $50,000
Christy has a 15% cost of equity capital (k)
Forecasts of Christy’s accounting data follow:

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$100,000</td>
<td>$113,000</td>
<td>$127,690</td>
<td>$144,290</td>
<td>$144,290</td>
</tr>
<tr>
<td>Operating expenses</td>
<td>77,500</td>
<td>90,000</td>
<td>103,500</td>
<td>118,000</td>
<td>119,040</td>
</tr>
<tr>
<td>Depreciation</td>
<td>10,000</td>
<td>11,300</td>
<td>12,770</td>
<td>14,430</td>
<td>14,430</td>
</tr>
<tr>
<td>Net income</td>
<td>$12,500</td>
<td>$11,700</td>
<td>$11,420</td>
<td>$11,860</td>
<td>$10,820</td>
</tr>
<tr>
<td>Dividends</td>
<td>6,000</td>
<td>4,355</td>
<td>3,120</td>
<td>11,860</td>
<td>10,820</td>
</tr>
</tbody>
</table>

Year 6 and beyond = Both accounting data and dividends approximate Year 5 levels
Christy’s forecasted book value at January 1, Year 1 is $58,594—computed as:

\[
58,594 = 50,000 + \frac{(0.25−0.15) \times 50,000}{1.15} + \frac{(0.2071−0.15) \times 56,500}{1.15^2} + \frac{(0.1789−0.15) \times 63,845}{1.15^3} \\
+ \frac{(0.1644−0.15) \times 72,145}{1.15^4} + \frac{(0.15−0.15) \times 72,145}{1.15^5} + \ldots
\]

This implies Christy stock should sell at a PB ratio of 1.17 ($58,594/$50,000) at January 1, Year 1.
Two additional observations are important.

1. Expected ROCE equals 15% (Christy’s cost of capital) for Year 5 and beyond. Since ROCE equals the cost of capital for Year 5 and beyond, these years’ results do not change the value of Christy (that is, abnormal earnings equal zero for those years). The anticipated effects of competition are implicit in estimates of future profitability.

2. Valuation estimates assume dividend payments occur at the end of each year. A more realistic assumption is that, on average, these cash outflows occur midway through the year. To adjust valuation estimates for mid-year discounting, multiply the present value of future abnormal earnings by \((1 - \frac{k}{2})\). For Christine Company the adjusted valuation estimate equals $59,239. This is computed as $50,000 plus \((1 - [0.15/2])\) 3 $8,594.
Earning power is the earnings level expected to persist into the foreseeable future.

- Accounting-based valuation models capitalize earning power.
- Many financial analyses directed at determining earning power.
Measurement of Earning Power reflects:

- Earnings and all its components
- Stability and persistence of earnings and its components
- Sustainable trends in earnings and its components
Factors in selecting a time horizon for measuring earning power

- One-year period is often too short to reliably measure earning power
- Many investing and financing activities are long term
- Better to measure earning power by using average (or cumulative) earnings over several years
- An extended period is less subject to distortions, irregularities, and other transitory effects
- Preferred time horizon in measuring earning power is typically 4 to 7 years
Earning Power and Forecasting

- Mechanics of Earnings Forecasting
- Quantitative Methods—time-series and regression models
- Judgmental Methods
- Combinations of Quantitative and Judgmental Methods
Factors Impacting Earnings Forecasts

- Current and past evidence
- Continuity and momentum of company performance
- Industry prospects
- Management

Management quality—resourcefulness
Asset management—operating skills

- Economic and competitive factors
- Key Indicators such as
  - capital expenditures
  - order backlogs
  - demand trends
Monitoring and Revising Earnings Forecasts

Available Interim Reports

- Quarterly reports (Form 10-Q)
- Reports on current developments (Form 8-K)
- Disclosure of separate fourth-quarter results
- Details of year-end adjustments
- Interim reports filed with the SEC such as:
  - Comparative interim and year-to-date income statement
  - Comparative balance sheets
  - Year-to-date statement of cash flows
  - Pro forma information on business combinations
  - Disclosure of accounting changes
  - Management’s narrative analysis of operating results
  - Reports of a change in auditor
Earning Power and Forecasting

Monitoring and Revising Earnings Forecasts

Limitations with Interim Reports
- Period-End Accounting Adjustments
- Seasonality in Business Activities
- Integral Reporting Method