Module 1: Financial Statement Analysis
Market Value Added, Accounting Returns: Tools for Value-Based Management
Main Sorts of Questions

Look at American Eagle’s (AEO’s) financials (spreadsheet)
Main Sorts of Questions

Look at American Eagle’s (AEO’s) financials (spreadsheet)

- They made money last year
  - Did they make enough?
  - If not, what were they doing wrong?

- Longer term, has management created value for the company’s owners?
Tools for Getting Answers

:: Long-term
   :: *Market Value Added*
      :: How much is AEO worth, relative to what it initially cost to buy their assets?

:: Short-term
   :: *Return on Invested Capital (ROIC)*
      :: How much capital was needed to generate last year’s earnings?
Market Value Added
(Long-Term Evaluation)
Market Value Added

:: How much would it cost to buy AEO’s “assets”?

:: How much would it cost to buy AEO’s “business”?

:: Why the difference?
Buying the Assets

\[
\text{Cash} \quad \text{AR, Inventory} \quad \text{Property, Plant \& Equipment (PPE)} \quad \text{Long-Term Cash} \\
\text{AP} \quad \text{Long-Term AP} \quad \text{Debt} \quad \text{Equity}
\]
Buying the Assets

Cash

AR, Inventory

Property, Plant & Equipment (PPE)

Long-Term Cash

=  

AP

Long-Term AP

Debt

Equity
Buying the Assets (2012 Financials)

\[ \text{BBA} = (\text{AR, Inventory}) + \text{PPE} - \text{AP} = 542 + 663 - 405 - 129 \]

Book Value

<table>
<thead>
<tr>
<th>Cash</th>
<th>AR, Inventory</th>
<th>Property, Plant &amp; Equipment (PPE)</th>
<th>Long-Term Cash</th>
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<tbody>
<tr>
<td>745</td>
<td>542</td>
<td>663</td>
<td>0</td>
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</table>

Book Value = 672

Operating Assets (Blue Area)

Book Value = 672
Buying the Business

American Eagle Outfitters (NYSE: AEO)

15.49 -0.47 (-2.91%)

Real-time: 3:23 PM EDT
NYSE real-time data - Disclaimer
Currency in USD

Range: 15.26 - 15.61
52 week: 12.78 - 18.49
Open: 15.40
Vol / Avg: 3.56M / 8.25M
Mkt cap: 2.77B
P/E: 13.33
Div yield: 0.12 / 3.23
EPS: 1.16
Shares: 180.89M
Beta: 0.79
Inst own: 101%

Jan 28, 2012 share price = $14.09
Buying the Business

\[
PPE(MV) = 2,025 - 542 + 405 + 129 = 2,017
\]
# Buying the Business

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
</tr>
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<tbody>
<tr>
<td>Market Capitalization (value of common equity)</td>
<td>2,770</td>
</tr>
<tr>
<td>Shares Outstanding</td>
<td>196.60</td>
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<tr>
<td>Price-per-Share</td>
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</tr>
<tr>
<td>Debt</td>
<td>0</td>
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<td>Market Value of the Firm (Market Cap + Debt)</td>
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<tr>
<td>Subtract:</td>
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<td>Non-Operating Assets (Cash)</td>
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<td>Value of Operating Assets (&quot;Enterprise Value&quot;)</td>
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Buying the Business

| Market Capitalization (value of common equity) | 2,770 |
| Shares Outstanding                             | 196.60 |
| Price-per-Share                                | 14.09 |
| Debt                                           | 0     |
| Market Value of the Firm (Market Cap + Debt)   | 2,770 |
| Subtract:                                      |       |
| Non-Operating Assets (Cash)                    | (745) |
| Value of Operating Assets ("Enterprise Value")| 2,025 |

Market Value Added

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<th>(NYSE:AEO)</th>
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<tr>
<td>Market Value of Operating Assets</td>
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</tr>
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<td>Book Value of Operating Assets</td>
<td>672</td>
</tr>
<tr>
<td>Market Value Added</td>
<td>1,353</td>
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What Explains the Value Added?

- Accounting is historic.
- Assets recorded at purchase price.
- Some assets don't appear on the balance sheet.
- Stock prices are "forward looking".
- Stock prices are the present value of all future cash flows.
What Explains the Value Added?

:: Accounting is historic
   :: Assets recorded at purchase price

:: Some assets don’t appear on the balance sheet

:: Stock prices are “forward looking”
   :: Stock prices are the present value of all future cash flows
What Else?

:: **YOU**: Good investment decision making

:: Plus

:: Business cycles

:: Technology changes

:: Luck
Last Thing

Value-added often expressed as a ratio: “Market to Book”

:: What we did:

\[
\frac{\text{Market}(\text{Invested Capital})}{\text{Book}(\text{Invested Capital})}
\]
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\frac{\text{Market}(\text{Invested Capital})}{\text{Book}(\text{Invested Capital})} = \frac{\text{Market}(\text{Operating Assets})}{\text{Book}(\text{Operating Assets})}
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Last Thing

Value-added often expressed as a ratio: “Market to Book”

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\[
\frac{\text{Market}(\text{Invested Capital})}{\text{Book}(\text{Invested Capital})} = \frac{\text{Market}(\text{Operating Assets})}{\text{Book}(\text{Operating Assets})}
\]

:: Another common one: “Market to Book Equity”

\[
\frac{\text{Market}(\text{Equity})}{\text{Book}(\text{Equity})} = \text{“Market Capitalization”}
\]

:: Also called “Price/Book” ratio: see internet
Summary: Long-Term Evaluation

Future Free Cash Flow (FCF)

Profitability and Efficiency
- Profit margins
- Operating efficiency
- Capital (asset) efficiency
- ROIC

Growth Opportunities
- New customers
- New products
- R&D, innovation

Sustainability
- Barriers to entry
- Specialized skills, processes
- Patent protection
- Brand loyalty

Market Interest Rates

Risk

Efficient Markets
Market forces will tend to drive market value toward intrinsic value

Intrinsic Value of Operations (Discounted FCF)

Non-Operating Assets (Cash)

Cost of Capital (%)
Investors required rate-of-return

Market Value of the Firm

Total Debt

Market Value of Equity

Number of Shares

Share Price

Future Free Cash Flow (FCF)

Discounted by

Capital Markets
Capital Structure (firm’s choice of debt and equity)
Summary: Long-Term Evaluation

Cash

AR, Inventory

Property, Plant & Equipment (PPE)

Long-Term Cash

= 

AP

Long-Term AP

Debt

Equity
Accounting Returns: ROIC
(Short-Term Evaluation)
Short-Term Evaluation

:: So, value added comes from how well managers use real assets to generate earnings over time. Can we measure this on a year-by-year basis?

:: Let’s use AEO. Did AEO have a good year in 2011?
What Happened Last Year?

- Total Debt
- Future Free Cash Flow (FCF)
- Profitability and Efficiency
  - Profit margins
  - Operating efficiency
  - Capital (asset) efficiency
  - ROIC
- Growth Opportunities
  - New customers
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- Share Price
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- Market Value of Equity
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  - Intrinsic Value of Operations (Discounted FCF)
  - Non-Operating Assets (Cash)
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- Risk
- Capital Markets
  - Capital Structure (firm’s choice of debt and equity)
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Cost of Capital (%)
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New customers
New products
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What Happened Last Year?

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Cost of Capital (%)
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Market Interest Rates

Risk

Capital Markets
  Capital Structure (firm’s choice of debt and equity)

Profitability and Efficiency
  Profit margins
  Operating efficiency
  Capital (asset) efficiency
  ROIC

Future Free Cash Flow (FCF)
Opportunity Cost

Central lesson of finance:

:: The *opportunity cost* of the capital that a business uses should be treated just like any other cost (rental cost, labor cost, raw materials cost).

FSA 24
Accounting Returns

\[
\text{Accounting Return} = \frac{\text{Profit}}{\text{Invested Capital}}
\]

:: Which measure of profit?

:: Which measure of invested capital?

:: Note: captures the idea of \textit{opportunity cost}
Profit: Net Operating Profit After Tax (NOPAT)

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= Amount of after-tax profit generated by the company’s business operations
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:: Start with EBIT or Earnings Before Interest and Taxes

:: Interest expenses (income) are non-operating (financial) so we ignore them when evaluating operations.
   :: Financing costs are taken into account in the calculation of the cost of capital (discussed later)
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:: Taxes are a cost of doing business and should be taken into account when measuring operating performance.
   :: Since we are ignoring financial income and expenses we must estimate taxes on EBIT
### Profit: NOPAT

<table>
<thead>
<tr>
<th></th>
<th>American Eagle (AEO)</th>
<th>Abercrombie and Fitch (ANF)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>2012</td>
<td>2011</td>
</tr>
<tr>
<td>Tax Rate (tax paid / taxable income)</td>
<td>0.360</td>
<td>0.383</td>
</tr>
<tr>
<td>Total Revenue (&quot;Sales&quot;)</td>
<td>3,160</td>
<td>2,968</td>
</tr>
<tr>
<td>Cost of Goods Sold (COGS), Total</td>
<td>(2,031)</td>
<td>(1,797)</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>1,128</td>
<td>1,171</td>
</tr>
<tr>
<td>Expenses, incl. Depreciation</td>
<td>(876)</td>
<td>(854)</td>
</tr>
<tr>
<td>Unusual Expense</td>
<td>(21)</td>
<td></td>
</tr>
<tr>
<td>Operating Income (EBIT)</td>
<td>231</td>
<td>317</td>
</tr>
<tr>
<td>Estimated Tax</td>
<td>(83)</td>
<td>(122)</td>
</tr>
<tr>
<td>Net Operating Profit After Tax (NOPAT)</td>
<td>148</td>
<td>196</td>
</tr>
<tr>
<td>NOPAT / Sales</td>
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## Profit: NOPAT

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<td></td>
<td>0.0311</td>
</tr>
<tr>
<td>Gain (loss) on Discontinued Operations</td>
<td>0</td>
<td>(41)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>NOPAT (Incl. of Disc. Ops)</td>
<td>148</td>
<td>154</td>
<td></td>
<td>130</td>
</tr>
<tr>
<td>NOPAT (incl. disc ops) / SALES</td>
<td>0.0468</td>
<td>0.0520</td>
<td></td>
<td>0.0313</td>
</tr>
</tbody>
</table>
Capital: *Invested* Capital

:: Operating Assets = Invested Capital

Book Value

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<tr>
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=

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<tr>
<th>AP</th>
<th>Long-Term AP</th>
<th>Debt</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>405</td>
<td>129</td>
<td>0</td>
<td>1,417</td>
</tr>
</tbody>
</table>

Operating Assets (Blue Area)
Book Value = **672**
Capital: *Invested* Capital

:: Operating Assets = Invested Capital

<table>
<thead>
<tr>
<th>Operating Assets</th>
<th>American Eagle</th>
<th>Abercrombie</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012</td>
<td>2011</td>
</tr>
<tr>
<td>AR</td>
<td>40</td>
<td>37</td>
</tr>
<tr>
<td>Inventory</td>
<td>378</td>
<td>301</td>
</tr>
<tr>
<td>Other</td>
<td>124</td>
<td>102</td>
</tr>
<tr>
<td>Accounts Payable</td>
<td>(184)</td>
<td>(168)</td>
</tr>
<tr>
<td>Accrued Expenses</td>
<td>(165)</td>
<td>(146)</td>
</tr>
<tr>
<td>Unredeemed Gift Cards</td>
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</tr>
<tr>
<td>Other</td>
<td>(12)</td>
<td>(33)</td>
</tr>
<tr>
<td>Net Operating Working Capital</td>
<td>137</td>
<td>52</td>
</tr>
<tr>
<td>PPE</td>
<td>582</td>
<td>643</td>
</tr>
<tr>
<td>Goodwill</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Intangibles</td>
<td>40</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>30</td>
<td>44</td>
</tr>
<tr>
<td>Total PPE-like Assets</td>
<td>663</td>
<td>706</td>
</tr>
<tr>
<td>Other long-term &quot;non-debt,&quot; or &quot;operating&quot; liabilities</td>
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<td>Net Operating &quot;Long-Term&quot; Capital</td>
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Capital: *Invested* Capital

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**Invested Capital**

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<tr>
<th></th>
<th>American Eagle</th>
<th>Abercrombie</th>
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<tbody>
<tr>
<td>Long Term Debt</td>
<td>-</td>
<td>58</td>
</tr>
<tr>
<td>Current Debt</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Debt</td>
<td>-</td>
<td>58</td>
</tr>
<tr>
<td>Equity</td>
<td>1,417</td>
<td>1,351</td>
</tr>
<tr>
<td>... Less Non-Operating Assets</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cash</td>
<td>(719)</td>
<td>(567)</td>
</tr>
<tr>
<td>Short-Term Investments</td>
<td>(26)</td>
<td>(68)</td>
</tr>
<tr>
<td>Long-Term Financial Investments</td>
<td>(15)</td>
<td>(101)</td>
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<td>Total Non Operating Assets</td>
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Return on Invested Capital (ROIC):

\[
ROIC = \frac{NOPAT}{Invested\ Capital}
\]
Return on Invested Capital (ROIC)

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<td>Operating Efficiency</td>
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<tr>
<td>([\text{NOPAT}/\text{SALES}]) net of Disc ops</td>
<td>0.0468</td>
<td>0.0520</td>
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<tr>
<td>Capital Efficiency</td>
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<td></td>
</tr>
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<td>([\text{SALES}/\text{INVESTED CAPITAL}])</td>
<td>4.7034</td>
<td>4.8146</td>
</tr>
<tr>
<td>Return on Invested Capital (ROIC)</td>
<td>([\text{NOPAT}/\text{INVESTED CAPITAL}])</td>
<td>0.2202</td>
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Big enough?
Dollar-Valued Cousin

:: Economic Profit: NOPAT less the dollar-valued opportunity cost of the capital you used

\[
\text{Economic Profit} = (\text{ROIC} - r) \times \text{Invested Capital}
\]

:: ROIC = Return on Invested Capital

:: r = Opportunity Cost of Capital
## Economic Profit

2012: NOPAT = 148, Econ profit = 91, Reqd profit = 57

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</tr>
<tr>
<td>Return on Invested Capital (ROIC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>=([	ext{NOPAT}/\text{INVESTED CAPITAL}])</td>
<td>0.2202</td>
<td>0.2505</td>
</tr>
<tr>
<td>Opportunity cost of capital, &quot;r&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>=0.0850</td>
<td>0.0850</td>
<td>0.0850</td>
</tr>
<tr>
<td>&quot;Spread&quot; (Excess Return on Inv Capit)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>=0.1352</td>
<td>0.1655</td>
<td>0.0201</td>
</tr>
<tr>
<td>Economic Profit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>=([\text{ROIC} - \text{OCC}] \times \text{INV. CAPITAL})</td>
<td>90.850</td>
<td>102.037</td>
</tr>
</tbody>
</table>
Takeaways: Tools for “Value-Based Management”

**Market Value Added** (Market/Book)

- Using your assets to create more value than their cost

**Return on Invested Capital (ROIC)**

- Earnings, per unit of capital
- Operating Efficiency × Capital Efficiency

- \[ \frac{\text{Earnings}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital}} \]

**Economic Profit**

- NOPAT in excess of dollar-valued opportunity cost of capital
What Drives Value Added?

:: High ROIC relative to opportunity cost of capital

:: Economic Profit

= (Return on invested capital less cost of capital) \times Invested Capital

:: Growth opportunities

:: Most growth opportunities do not have direct impact on ROIC

:: Evaluate with NPV, IRR

:: NPV and IRR coming soon!
Answers to Questions

:: Did AEO make a lot of money in 2011?

:: EBIT was 231. More relevant, NOPAT was 148.

:: Was this “enough?”

:: Yes (but more would have been better!). The opportunity cost of capital was $672 \times 0.085 = 57$. So the economic profit was $148 - 57 = 91$.

:: Has management created value for the company’s owners?

:: Yes. Market-value added is 1,353

:: Note: is this a big number? It’s important to have some benchmarks here. Market/Book Equity is $2,025/672 \approx 3$. Compare to similar companies.
## Market/Book Equity Ratios, 2011

<table>
<thead>
<tr>
<th>Company</th>
<th>Market Value Added</th>
<th>Market/Book Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exxon</td>
<td>205,589</td>
<td>1.75</td>
</tr>
<tr>
<td>Microsoft</td>
<td>143,423</td>
<td>6.15</td>
</tr>
<tr>
<td>Walmart</td>
<td>136,215</td>
<td>1.92</td>
</tr>
<tr>
<td>Coca-Cola</td>
<td>126,106</td>
<td>3.32</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td>90,007</td>
<td>2.19</td>
</tr>
<tr>
<td>Delta Airlines</td>
<td>−13,557</td>
<td>0.72</td>
</tr>
<tr>
<td>Alcoa</td>
<td>−14,160</td>
<td>0.55</td>
</tr>
<tr>
<td>Time Warner</td>
<td>−33,525</td>
<td>0.69</td>
</tr>
<tr>
<td>Sprint Nextel</td>
<td>−42,790</td>
<td>0.50</td>
</tr>
<tr>
<td>Bank of America</td>
<td>−203,171</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Material for Discussion
(time permitting)
Exhaust-ed, *Financial Times*, 5/2/2015

*Lex.*

**Exhaust-ed**

Return on invested capital (%)

- Aerospace & defence industry
- Chemicals industry
- Consumer industry
- Premium carmakers
- Mainstream carmakers*

Benchmark cost of capital

* Includes FCA, Ford, General Motors, Honda, Hyundai, Kia, Nissan, PSA, Renault, Toyota, Volkswagen

Source: company
Sergio Marchionne, Fiat Chrysler’s chief executive, complained this week about the auto industry’s addiction to capital spending, and called for consolidation. The message is hardly new — he has been calling for it since before Fiat acquired Chrysler more than six years ago.

The numbers are striking. In 2014 the world’s main carmakers spent €2bn a week on capital expenditure and research & development. At this rate the average carmaker spends its enterprise value every three to four years — faster than other industries (Mr Marchionne says telecoms companies take 13 years, and aerospace/defence groups 19).

Over the next decade, cars need to change dramatically to meet stricter emission limits, more stringent safety regulations and customers’ desire for more connected cars. This is costly. But rather than working together, carmakers are each trying to build their own solution.

Mr Marchionne wants investors to force the industry to consolidate. That is one solution, but outsourcing basic engine design and manufacture is also an option — most customers would not know the difference. Joint ventures (such as Renault Nissan) might also be useful, but they are not always easy to pull off. Mergers and acquisitions are unlikely now that car companies are making money again. In any case, large state and family shareholdings in the sector make dealmaking difficult.

However much Fiat Chrysler may need a deal (it burnt €1bn of cash last quarter) Mr Marchionne’s familiar message is likely to fall on deaf ears.
Evaluating CEO Performance

Note: take a look at the lowest paid!

Performance metric: last year’s stock return?

Tools see Widespread Use


Sony: breaking up is hard to do
By Jennifer Hughes and Robert Armstrong

Technology: Sony is in need of a radical change

Sony president and CEO Kazuo Hirai in Tokyo earlier this year

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<table>
<thead>
<tr>
<th>Return on invested capital</th>
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<tbody>
<tr>
<td>Average fiscal years, 2003-12 (%)</td>
</tr>
<tr>
<td>13</td>
</tr>
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</table>

The return generated on all capital contributed is a good performance measure. By this metric, Sony and its Japanese rivals Sharp and Panasonic have been terrible bets. It’s not an industry problem; Samsung proves there is money to be made.

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<table>
<thead>
<tr>
<th>Ebitda and market cap</th>
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<tbody>
<tr>
<td>Ebitda (¥bn)</td>
</tr>
<tr>
<td>800</td>
</tr>
<tr>
<td>600</td>
</tr>
<tr>
<td>400</td>
</tr>
<tr>
<td>200</td>
</tr>
</tbody>
</table>

The surge in Sony’s equity value reflects, in part, the efforts of the US activist investor Dan Loeb, who has agitated for a break-up. Sony’s corporate culture makes that very unlikely, so the profits at the film, music and insurance divisions will continue to be offset by losses from electronics.
Bayer’s Room to Raise Monsanto Bid Looks Limited
Satisfying takeover target without spooking investors poses challenge for German company
Apple Passes Coca-Cola as Most Valuable Brand

SEPT. 28, 2013

Advertising
By STUART ELLIOTT

APPLE is the new most valuable brand in the world, according to a closely followed annual report.

The report, to be released on Monday, is from Interbrand, a corporate identity and brand consulting company owned by the Omnicom Group that has been compiling what it calls the Best Global Brands report since 2000. The previous No. 1 brand, Coca-Cola, fell to No. 3.

A scene from a commercial for the iPhone 5 by Apple, a brand valued at $98.3 billion by Interbrand, a consulting company.
Exercise

How much is Apple’s brand capital worth?
Some Serious Estimates

Use goodwill, expenses etc.