



# Analysis of Financial Statements

- **Ratio analysis**
- **Du Pont system**
- **Limitations of ratio analysis**
- **Qualitative factors**

# Computron Income Statement

	<u>2004</u>	<u>2005E</u>
Sales	5,834,400	7,035,600
COGS	4,980,000	5,800,000
Other expenses	720,000	612,960
Deprec.	<u>116,960</u>	<u>120,000</u>
Tot. op. costs	<u>5,816,960</u>	<u>6,532,960</u>
EBIT	17,440	502,640
Int. expense	<u>176,000</u>	<u>80,000</u>
EBT	(158,560)	422,640
Taxes (40%)	<u>(63,424)</u>	<u>169,056</u>
Net income	<u>(95,136)</u>	<u>253,584</u>

## Balance Sheets: Assets

	<u>2004</u>	<u>2005E</u>
Cash	7,282	14,000
S-T invest.	20,000	71,632
AR	632,160	878,000
Inventories	<u>1,287,360</u>	<u>1,716,480</u>
Total CA	1,946,802	2,680,112
Net FA	<u>939,790</u>	<u>836,840</u>
Total assets	<u>2.886.592</u>	<u>3.516.952</u>

# Balance Sheets: Liabilities & Equity

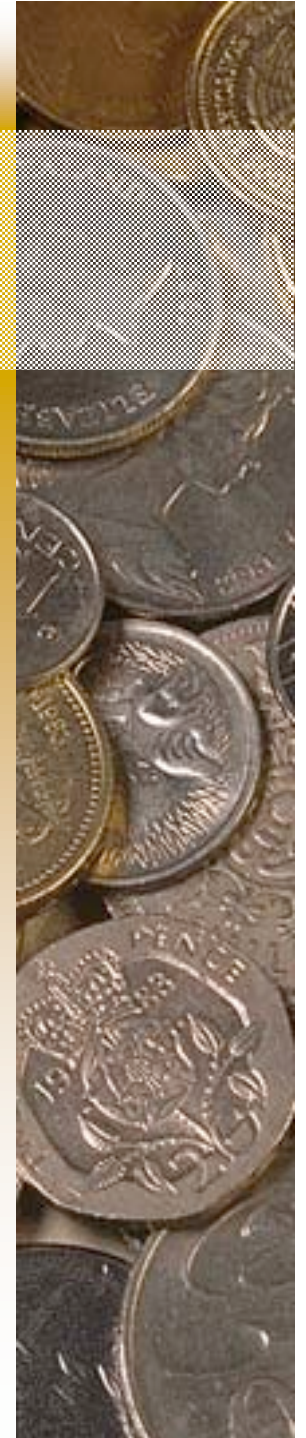
	<u>2004</u>	<u>2005E</u>
Accts. payable	324,000	359,800
Notes payable	720,000	300,000
Accruals	<u>284,960</u>	<u>380,000</u>
Total CL	1,328,960	1,039,800
Long-term debt	1,000,000	500,000
Common stock	460,000	1,680,936
Ret. earnings	<u>97,632</u>	<u>296,216</u>
Total equity	<u>557,632</u>	<u>1,977,152</u>
Total L&E	<u>2,886,592</u>	<u>3,516,952</u>

## Other Computron Data

	<u>2004</u>	<u>2005E</u>
Stock price	\$6.00	\$12.17
# of shares	100,000	250,000
EPS	-\$0.95	\$1.01
DPS	\$0.11	\$0.22
Book val. per share	\$5.58	\$7.91
Lease payments	40,000	40,000
Tax rate	0.4	0.4

# Why are ratios useful?

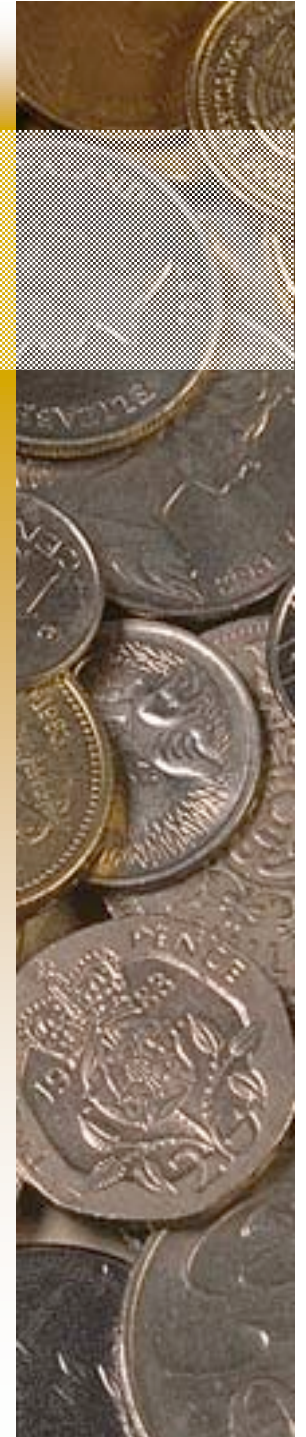
- **Standardize numbers; facilitate comparisons**
- **Used to highlight weaknesses and strengths**



# What are the five major categories of ratios?

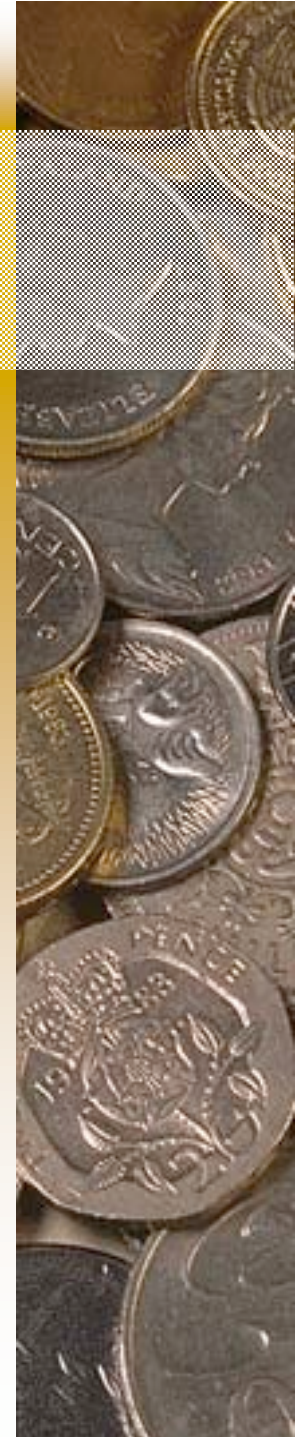
- **Liquidity:** Can we make required payments as they fall due?
- **Asset management:** Do we have the right amount of assets for the level of sales?
- **Debt management:** Do we have the right mix of debt and equity?

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# What are the five major categories of ratios?

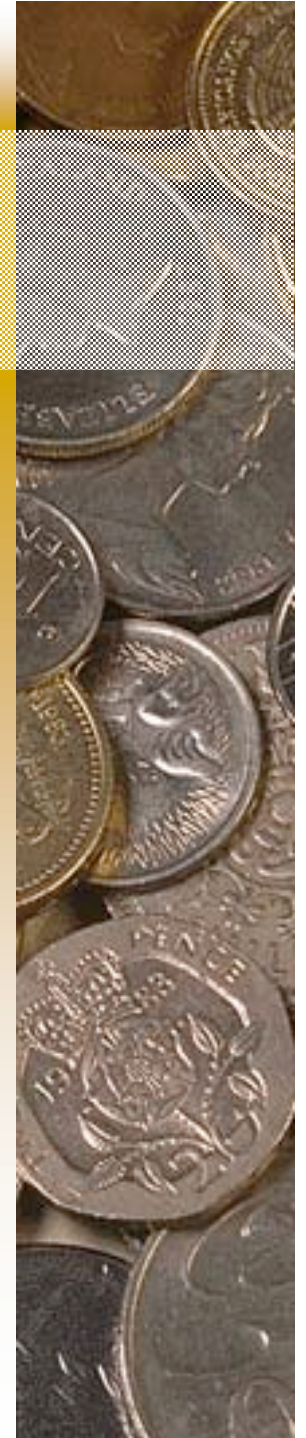
- **Profitability:** Do sales prices exceed unit costs, and are sales high enough as reflected in PM, ROE, and ROA?
- **Market value:** Do investors like what they see as reflected in P/E and M/B ratios?



# Current and Quick Ratios for 2005

$$CR_{05} = \frac{CA}{CL} = \frac{\$2,680}{\$1,040} = 2.58x.$$

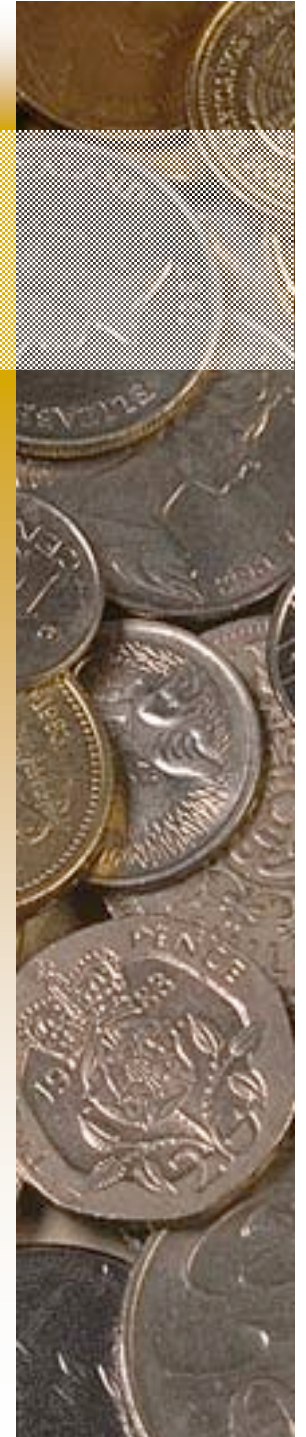
$$QR_{05} = \frac{CA - \text{Inv.}}{CL} \\ = \frac{\$2,680 - \$1,716}{\$1,040} = 0.93x.$$



# Comments on CR and QR

	2005E	2004	2003	Ind.
CR	2.58x	1.46x	2.3x	2.7x
QR	0.93x	0.5x	0.8x	1.0x

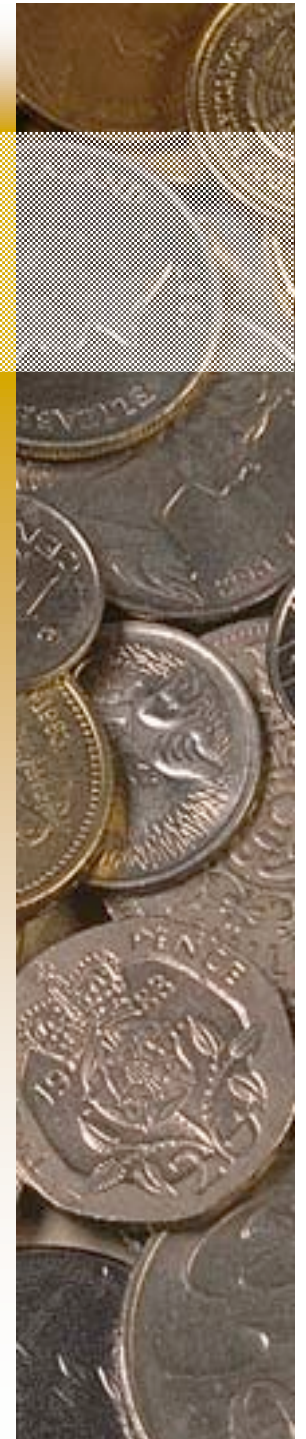
- Liquidity position is weak.
- Expected to improve but still slightly below the industry average.



# Inventory Turnover Ratio

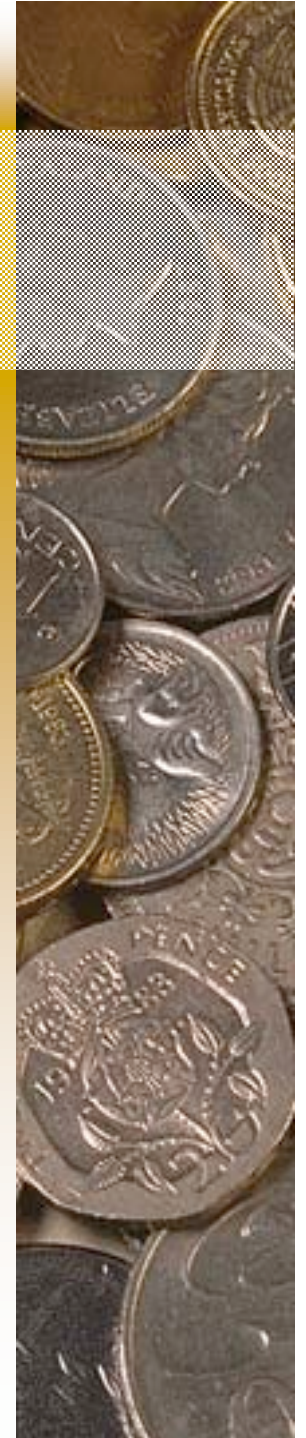
$$\begin{aligned}\text{Inv. turnover} &= \frac{\text{Sales}}{\text{Inventories}} \\ &= \frac{\$7,036}{\$1,716} = 4.10x.\end{aligned}$$

	2005E	2004	2003	Ind.
Inv. T.	4.1x	4.5x	4.8x	6.1x



# Comments on Inventory Turnover

- Inventory turnover is **below** industry average.
- Firm might have old inventory, or its control might be poor.
- No improvement is currently forecasted.

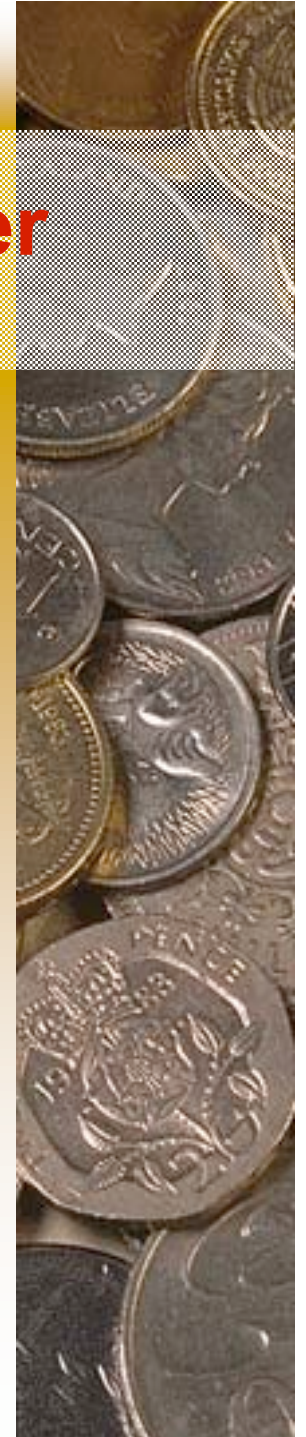


**DSO is the average number of days after making a sale before receiving cash.**

$$\text{DSO} = \frac{\text{Receivables}}{\text{Average sales per day}}$$

$$= \frac{\text{Receivables}}{\text{Sales}/365} = \frac{\$878}{\$7,036/365}$$

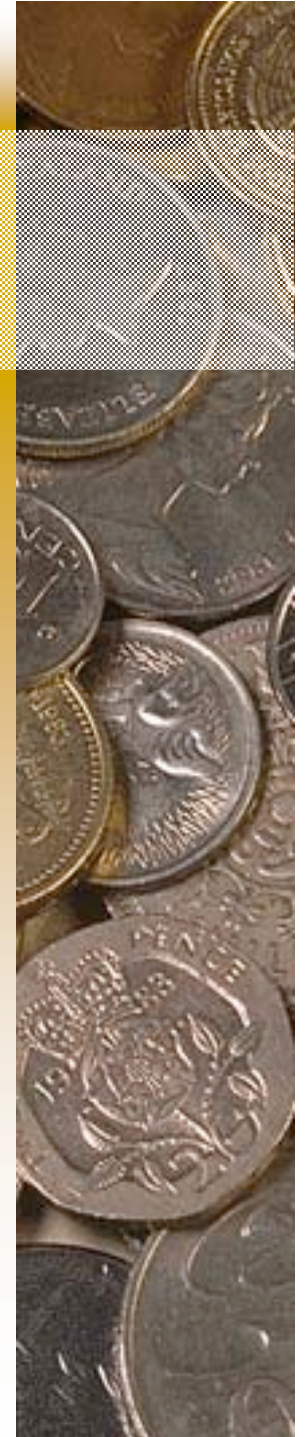
$$= 45.5 \text{ days.}$$



# Appraisal of DSO

	2005	2004	2003	Ind.
DSO	45.5	39.5	37.4	32.0

- Firm collects too slowly, and situation is getting worse.
- Poor credit policy.



## Fixed Assets and Total Assets Turnover Ratios

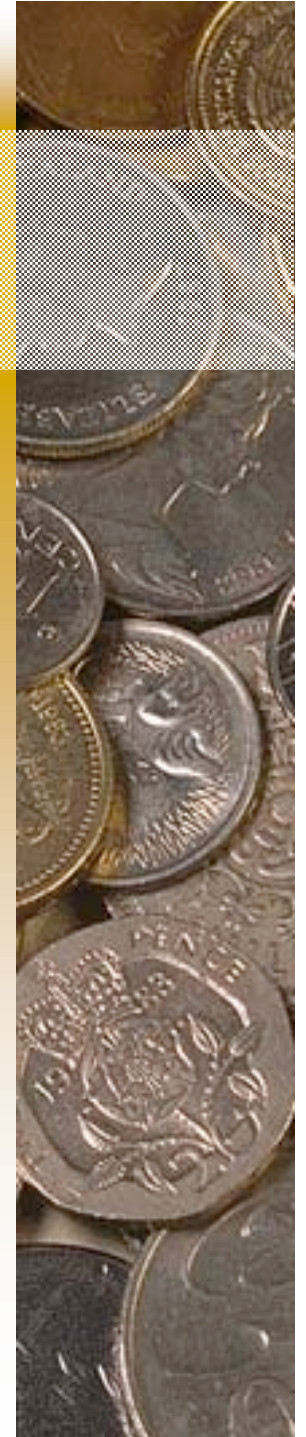
$$\text{Fixed assets turnover} = \frac{\text{Sales}}{\text{Net fixed assets}}$$

$$= \frac{\$7,036}{\$837} = 8.41x.$$

$$\text{Total assets turnover} = \frac{\text{Sales}}{\text{Total assets}}$$

$$= \frac{\$7,036}{\$3,517} = 2.00x.$$

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	2005E	2004	2003	Ind.
FA TO	8.4x	6.2x	10.0x	7.0x
TA TO	2.0x	2.0x	2.3x	2.5x

- **Computron FA turnover is expected to exceed industry average. Good.**
- **TA turnover not up to industry average. Caused by excessive current assets (A/R and inventory).**

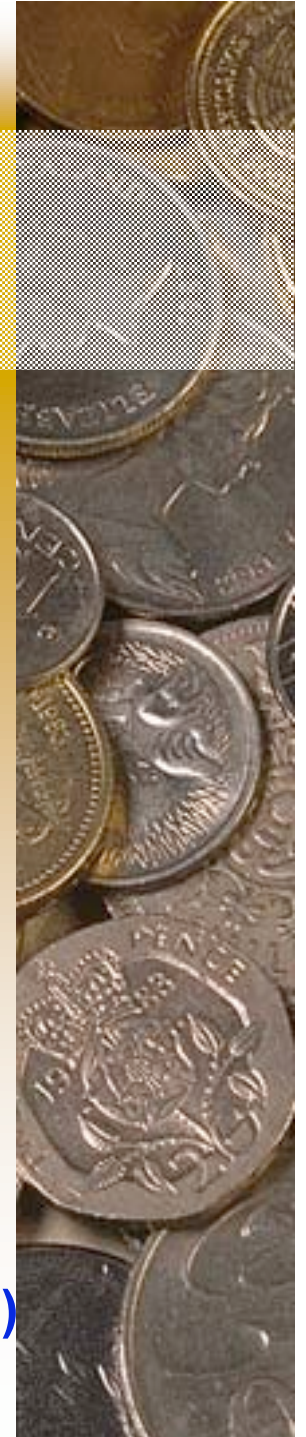


## Debt, TIE, and EBITDA coverage ratios.

$$\begin{aligned}\text{Debt ratio} &= \frac{\text{Total liabilities}}{\text{Total assets}} \\ &= \frac{\$1,040 + \$500}{\$3,517} = 43.8\%.\end{aligned}$$

$$\begin{aligned}\text{TIE} &= \frac{\text{EBIT}}{\text{Int. expense}} \\ &= \frac{\$502.6}{\$80} = 6.3x.\end{aligned}$$

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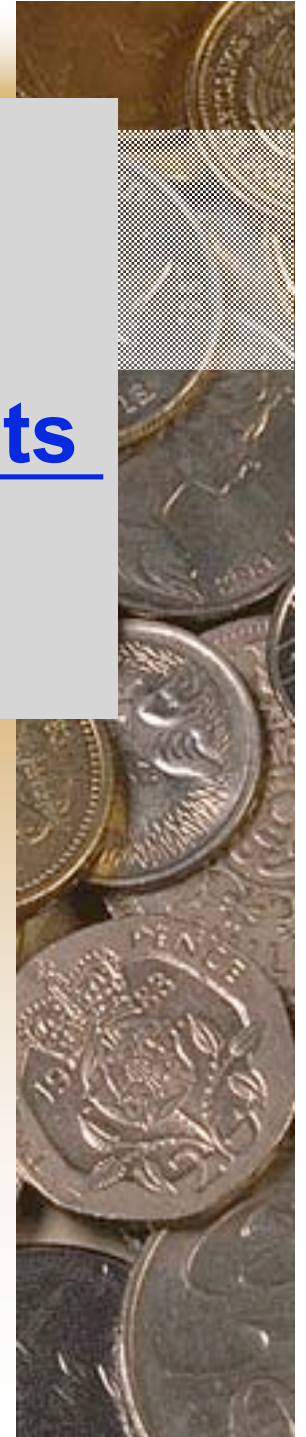


**EBITDA  
coverage = EC**

**EBIT + Depr. & Amort. + Lease payments  
Interest expense + Lease pmt. + Loan pmt.**

$$= \frac{\$502.6 + \$120 + \$40}{\$80 + \$40 + \$0} = 5.5x.$$

**All three ratios reflect use of debt, but focus on different aspects.**



## How do the debt management ratios compare with industry averages?

	2005E	2004	2003	Ind.
D/A	43.8%	80.7%	54.8%	50.0%
TIE	6.3x	0.1x	3.3x	6.2x
EC	5.5x	0.8x	2.6x	8.0x

Recapitalization improved situation, but lease payments drag down EC.

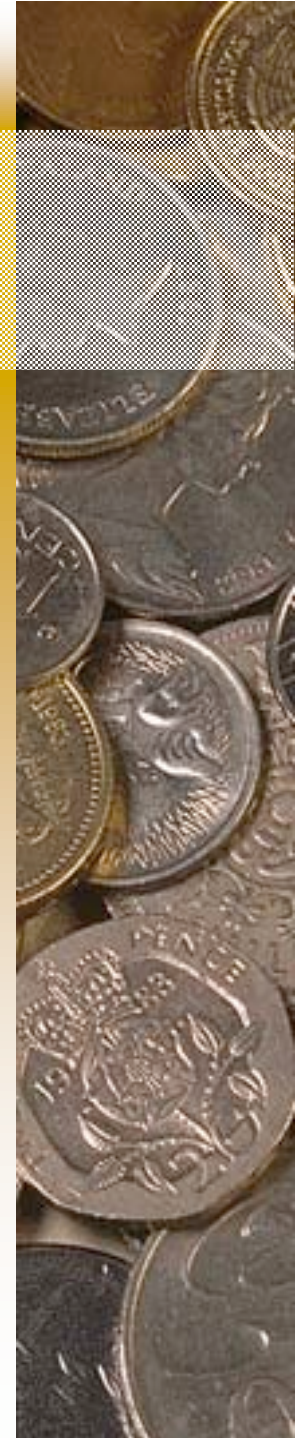


## Profit Margin (PM)

$$PM = \frac{NI}{Sales} = \frac{\$253.6}{\$7,036} = 3.6\%$$

	2005E	2004	2003	Ind.
PM	3.6%	-1.6%	2.6%	3.6%

Very bad in 2004, but projected to meet industry average in 2005.  
Looking good.

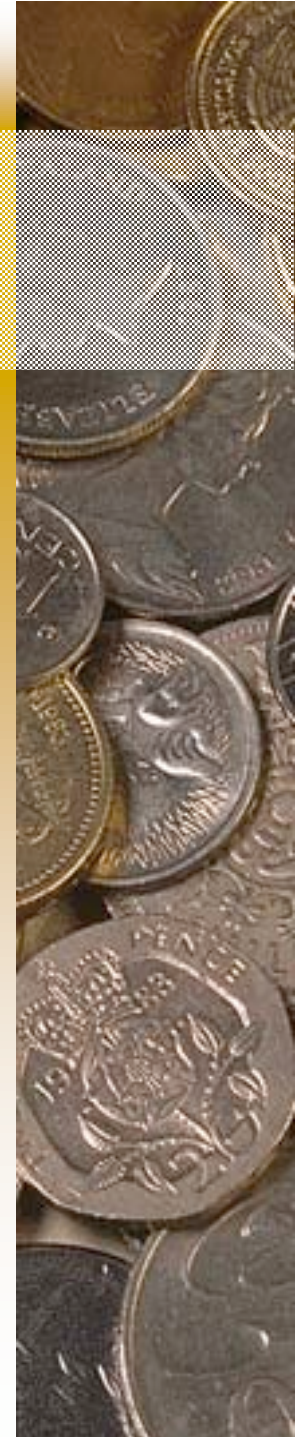


# Basic Earning Power (BEP)

- $$\text{BEP} = \frac{\text{EBIT}}{\text{Total assets}}$$

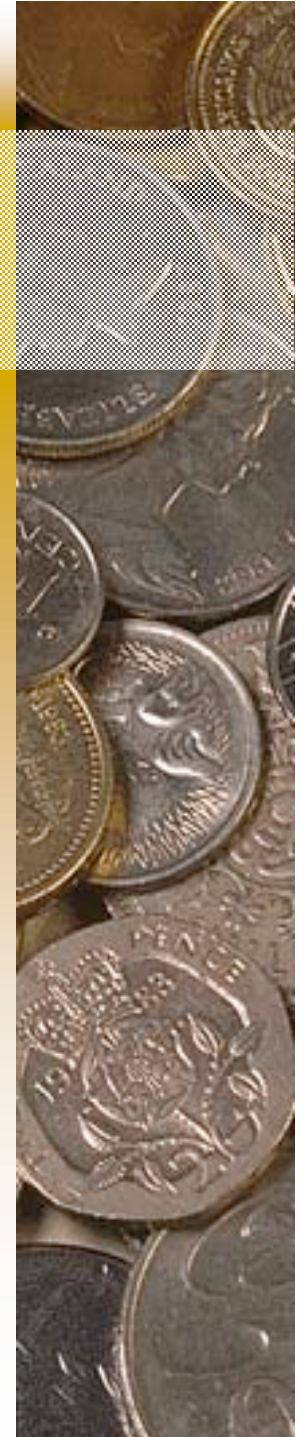
- $$= \frac{\$502.6}{\$3,517} = 14.3\%$$

(More...)



	2005E	2004	2003	Ind.
BEP	14.3%	0.6%	14.2%	17.8%

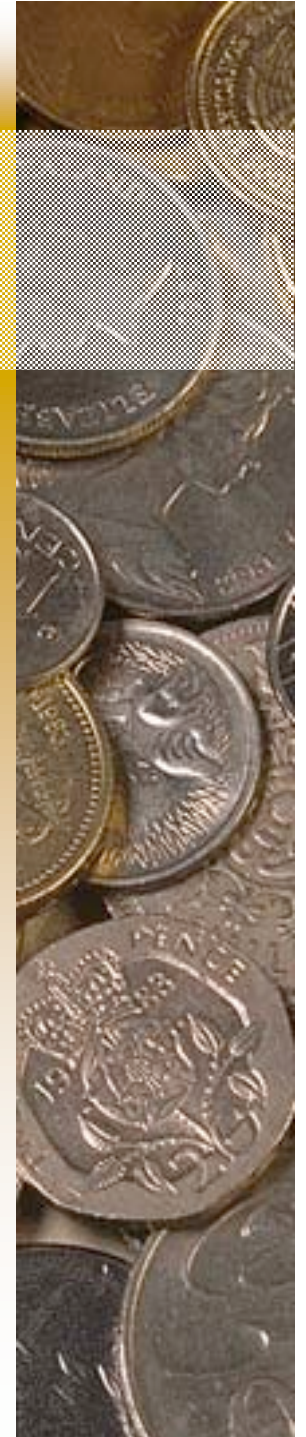
- BEP removes effect of taxes and financial leverage. Useful for comparison.
- Projected to be below average.
- Room for improvement.



## Return on Assets (ROA) and Return on Equity (ROE)

$$\text{ROA} = \frac{\text{Net income}}{\text{Total assets}}$$
$$= \frac{\$253.6}{\$3,517} = 7.2\%$$

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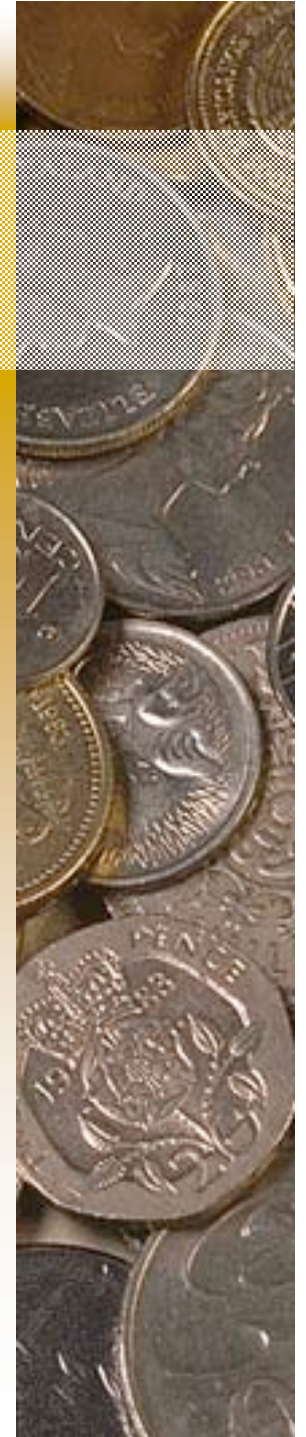


$$\text{ROE} = \frac{\text{Net income}}{\text{Common equity}}$$

$$= \frac{\$253.6}{\$1,977} = 12.8\%$$

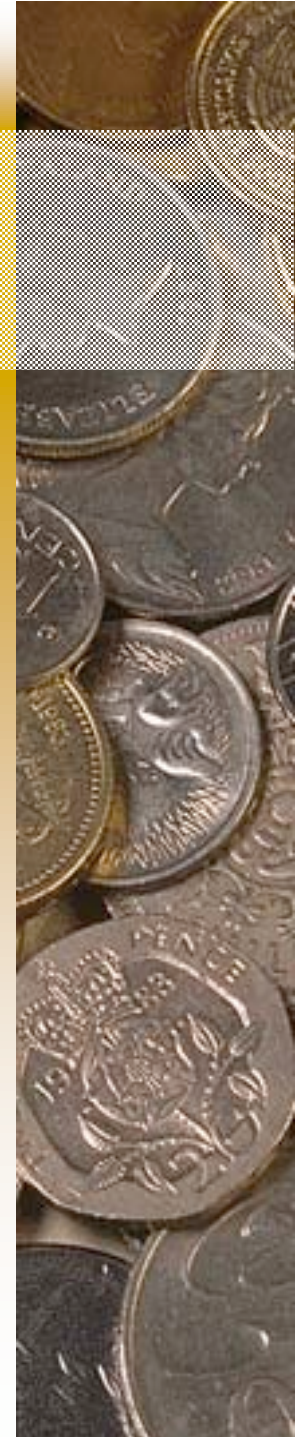
	2005E	2004	2003	Ind.
ROA	7.2%	-3.3%	6.0%	9.0%
ROE	12.8%	-17.1%	13.3%	18.0%

**Both below average but improving.**



## Effects of Debt on ROA and ROE

- ROA is lowered by debt -- interest expense lowers net income, which also lowers ROA.
- However, the use of debt lowers equity, and if equity is lowered more than net income, ROE would increase.

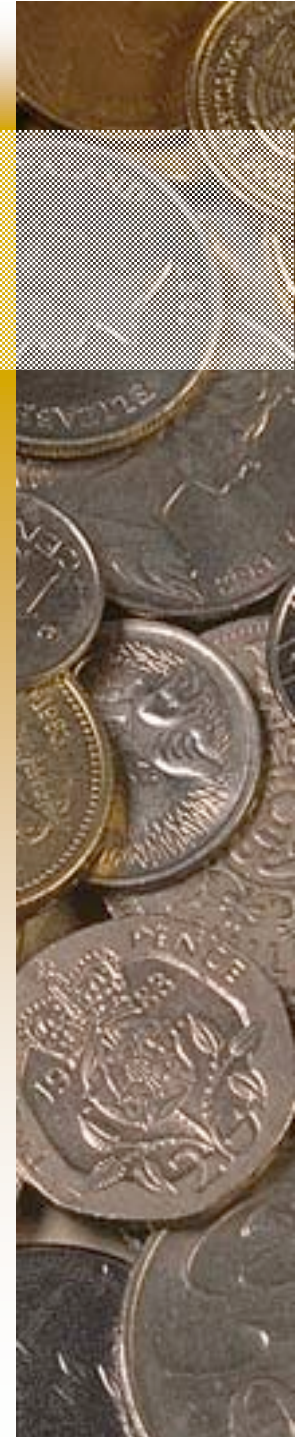


## Calculate and appraise the P/E, P/CF, and M/B ratios.

**Price = \$12.17.**

$$\text{EPS} = \frac{\text{NI}}{\text{Shares out.}} = \frac{\$253.6}{250} = \$1.01.$$

$$\text{P/E} = \frac{\text{Price per share}}{\text{EPS}} = \frac{\$12.17}{\$1.01} = 12x.$$



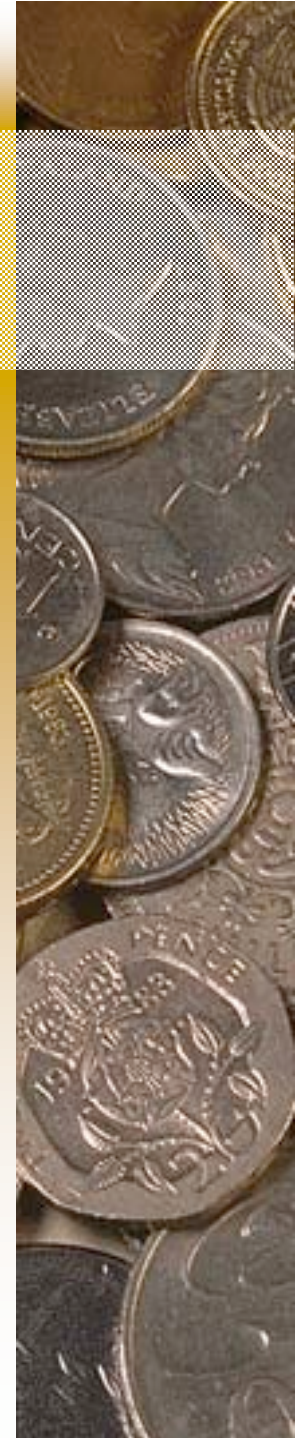
# Industry P/E Ratios

<u>Industry</u>	<u>Ticker*</u>	<u>P/E</u>
Banking	STI	17.6
Software	MSFT	33.0
Drug	PFE	31.7
Electric Utilities	DUK	13.7
Semiconductors	INTC	57.5
Steel	NUE	28.1
Tobacco	MO	12.3
<u>Water Utilities</u>	<u>CFT</u>	<u>21.8</u>
<b>S&amp;P 500</b>		<b>30.4</b>

\*Ticker is for typical firm in industry, but P/E ratio is for the industry, not the individual firm.

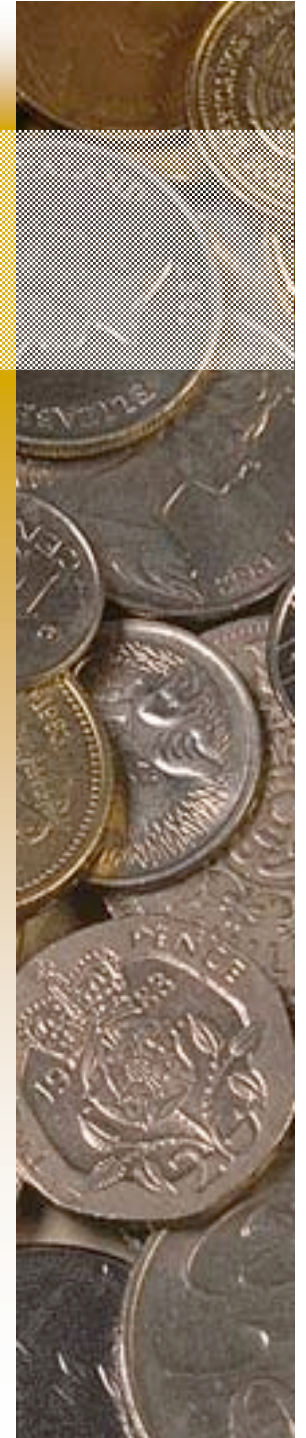
$$\begin{aligned} \text{CF per share} &= \frac{\text{NI} + \text{Depr.}}{\text{Shares out.}} \\ &= \frac{\$253.6 + \$120.0}{250} = \$1.49. \end{aligned}$$

$$\begin{aligned} \text{P/CF} &= \frac{\text{Price per share}}{\text{Cash flow per share}} \\ &= \frac{\$12.17}{\$1.49} = 8.2x. \end{aligned}$$



$$\text{BVPS} = \frac{\text{Com. equity}}{\text{Shares out.}}$$
$$= \frac{\$1,977}{250} = \$7.91.$$

$$\text{M/B} = \frac{\text{Mkt. price per share}}{\text{Book value per share}}$$
$$= \frac{\$12.17}{\$7.91} = 1.54x.$$



	2005E	2004	2003	Ind.
P/E	12.0x	-6.3x	9.7x	14.2x
P/CF	8.2x	27.5x	8.0x	7.6x
M/B	1.5x	1.1x	1.3x	2.9x

- P/E: How much investors will pay for \$1 of earnings. High is good.
- M/B: How much paid for \$1 of book value. Higher is good.
- P/E and M/B are high if ROE is high, risk is low.



# Common Size Balance Sheets:

## Divide all items by Total Assets

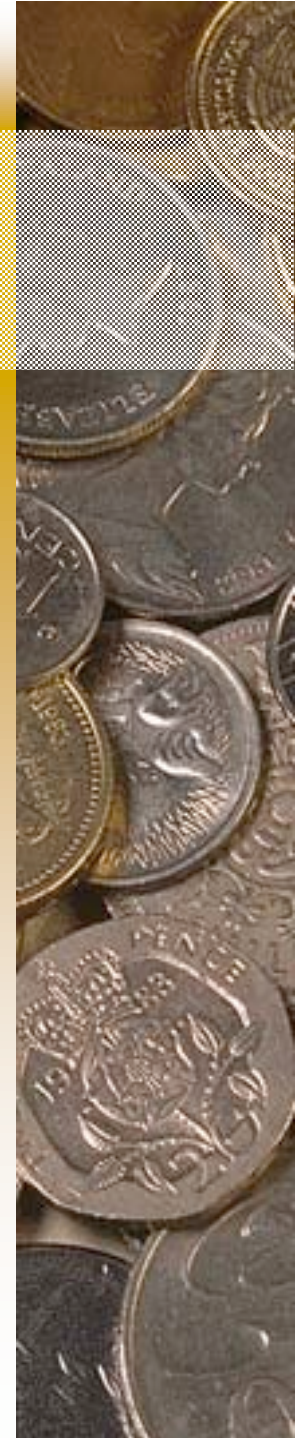
<i>Assets</i>	<u>2003</u>	<u>2004</u>	<u>2005E</u>	<u>Ind.</u>
Cash	0.6%	0.3%	0.4%	0.3%
ST Invest.	3.3%	0.7%	2.0%	0.3%
AR	23.9%	21.9%	25.0%	22.4%
Invent.	48.7%	44.6%	48.8%	41.2%
Total CA	76.5%	67.4%	76.2%	64.1%
<u>Net FA</u>	<u>23.5%</u>	<u>32.6%</u>	<u>23.8%</u>	<u>35.9%</u>
TA	100.0%	100.0%	100.0%	100.0%

## Divide all items by Total Liabilities & Equity

	<u>2003</u>	<u>2004</u>	<u>2005E</u>	<u>Ind.</u>
AP	9.9%	11.2%	10.2%	11.9%
Notes pay.	13.6%	24.9%	8.5%	2.4%
Accruals	9.3%	9.9%	10.8%	9.5%
Total CL	32.8%	46.0%	29.6%	23.7%
LT Debt	22.0%	34.6%	14.2%	26.3%
<u>Total eq.</u>	<u>45.2%</u>	<u>19.3%</u>	<u>56.2%</u>	<u>50.0%</u>
Total L&E	100.0%	100.0%	100.0%	100.0%

# Analysis of Common Size Balance Sheets

- **Computron has higher proportion of inventory and current assets than Industry.**
- **Computron now has more equity (which means LESS debt) than Industry.**
- **Computron has more short-term debt than industry, but less long-term debt than industry.**



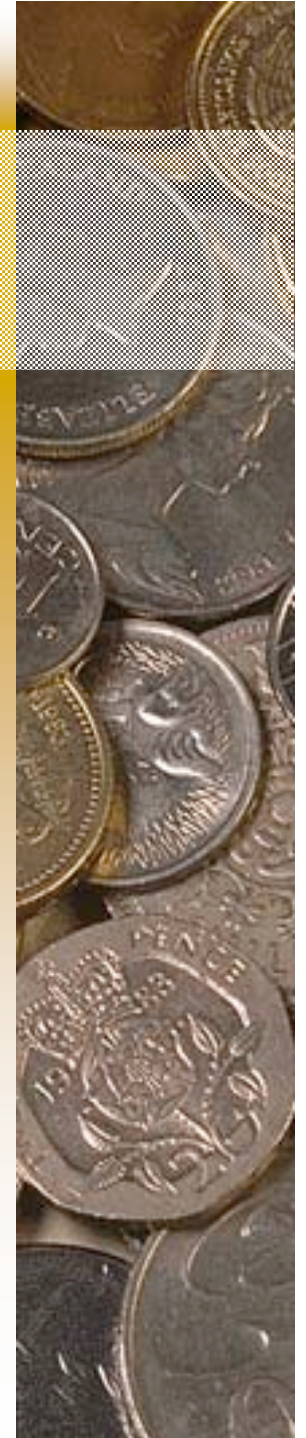
# Common Size Income Statement:

## Divide all items by Sales

	<u>2003</u>	<u>2004</u>	<u>2005E</u>	<u>Ind.</u>
Sales	100.0%	100.0%	100.0%	100.0%
COGS	83.4%	85.4%	82.4%	84.5%
Other exp.	9.9%	12.3%	8.7%	4.4%
Depr.	0.6%	2.0%	1.7%	4.0%
EBIT	6.1%	0.3%	7.1%	7.1%
Int. Exp.	1.8%	3.0%	1.1%	1.1%
EBT	4.3%	-2.7%	6.0%	5.9%
Taxes	1.7%	-1.1%	2.4%	2.4%
NI	2.6%	-1.6%	3.6%	3.6%

# Analysis of Common Size Income Statements

- **Computron has lower COGS (86.7) than industry (84.5), but higher other expenses. Result is that Computron has similar EBIT (7.1) as industry.**

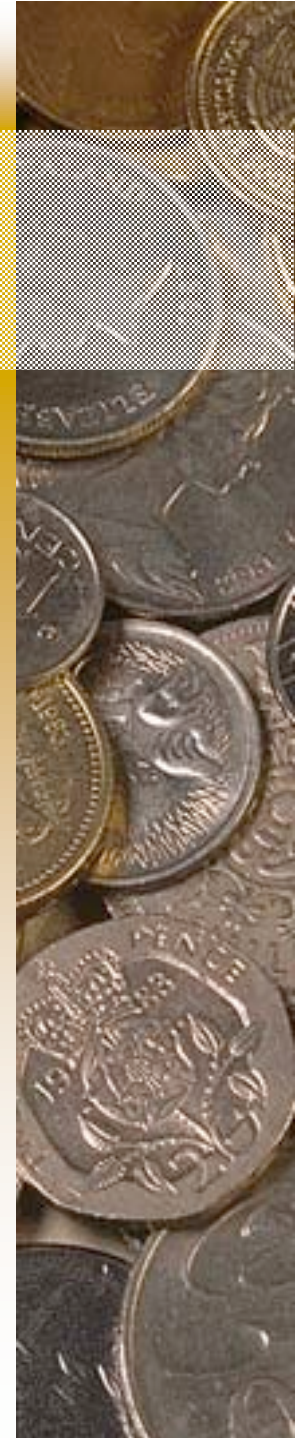


# Percentage Change Analysis: Percentage Change from First Year (2003)

<i>Income St.</i>	<u>2003</u>	<u>2004</u>	<u>2005E</u>
Sales	0.0%	70.0%	105.0%
COGS	0.0%	73.9%	102.5%
Other exp.	0.0%	111.8%	80.3%
Depr.	0.0%	518.8%	534.9%
EBIT	0.0%	-91.7%	140.4%
Int. Exp.	0.0%	181.6%	28.0%
EBT	0.0%	-208.2%	188.3%
Taxes	0.0%	-208.2%	188.3%
NI	0.0%	-208.2%	188.3%

# Analysis of Percent Change Income Statement

- We see that 2005 sales grew 105% from 2003, and that NI grew 188% from 2003.
- So Computron has become more profitable.



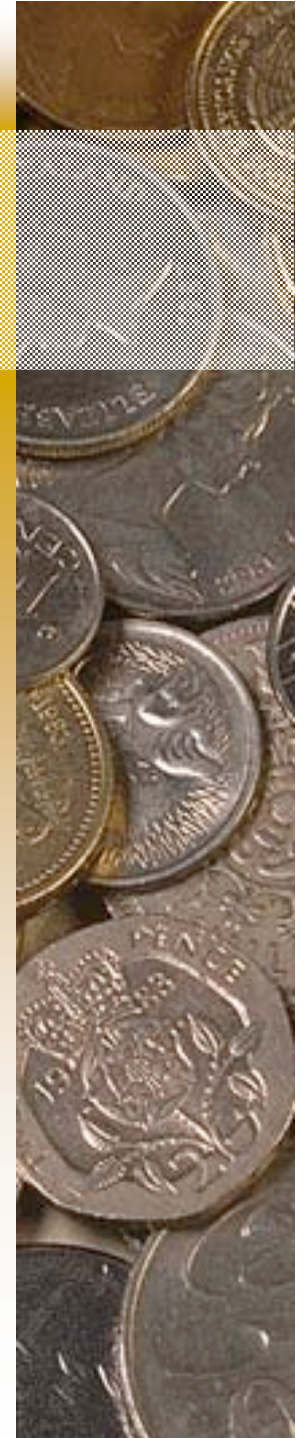
# Percentage Change Balance Sheets

<i>Assets</i>	<u>2003</u>	<u>2004</u>	<u>2005E</u>
Cash	0.0%	-19.1%	55.6%
ST Invest.	0.0%	-58.8%	47.4%
AR	0.0%	80.0%	150.0%
Invent.	0.0%	80.0%	140.0%
Total CA	0.0%	73.2%	138.4%
Net FA	0.0%	172.6%	142.7%
TA	0.0%	96.5%	139.4%

<b><i>Liab. &amp; Eq.</i></b>	<b><u>2003</u></b>	<b><u>2004</u></b>	<b><u>2005E</u></b>
<b>AP</b>	<b>0.0%</b>	<b>122.5%</b>	<b>147.1%</b>
<b>Notes pay.</b>	<b>0.0%</b>	<b>260.0%</b>	<b>50.0%</b>
<b>Accruals</b>	<b>0.0%</b>	<b>109.5%</b>	<b>179.4%</b>
<b>Total CL</b>	<b>0.0%</b>	<b>175.9%</b>	<b>115.9%</b>
<b>LT Debt</b>	<b>0.0%</b>	<b>209.2%</b>	<b>54.6%</b>
<b>Total eq.</b>	<b>0.0%</b>	<b>-16.0%</b>	<b>197.9%</b>
<b>Total L&amp;E</b>	<b>0.0%</b>	<b>96.5%</b>	<b>139.4%</b>

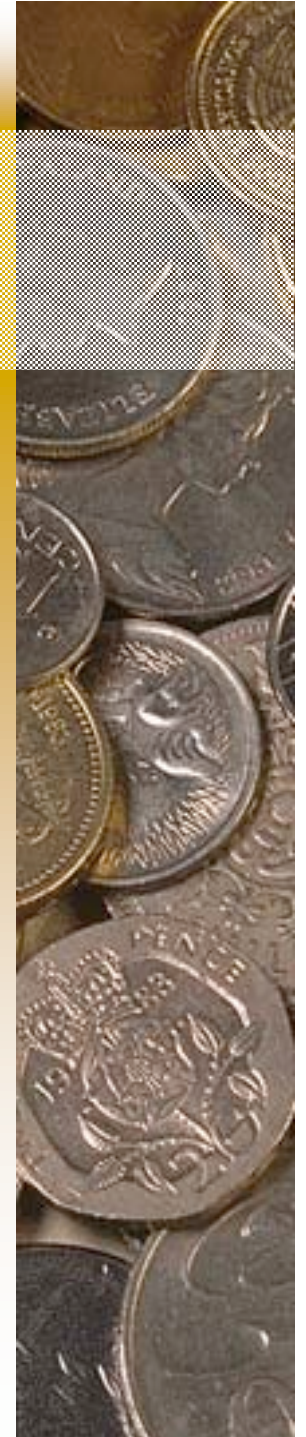
# Analysis of Percent Change Balance Sheets

- We see that total assets grew at a rate of 139%, while sales grew at a rate of only 105%. So asset utilization remains a problem.



# The Du Pont System

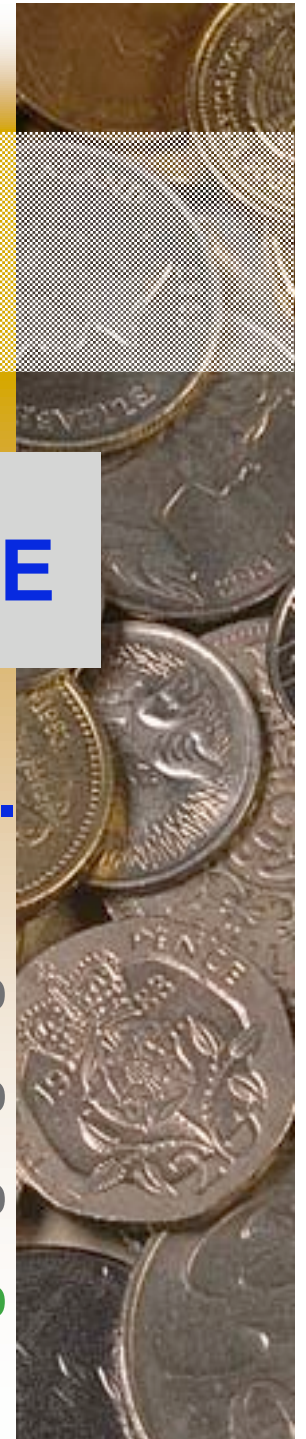
- **The Du Pont system focuses on:**
  - Expense control (PM)
  - Asset utilization (TATO)
  - Debt utilization (EM)
- **It shows how these factors combine to determine the ROE.**



## The Du Pont System

$$\left( \text{Profit margin} \right) \left( \text{TA turnover} \right) \left( \text{Equity multiplier} \right) = \text{ROE}$$

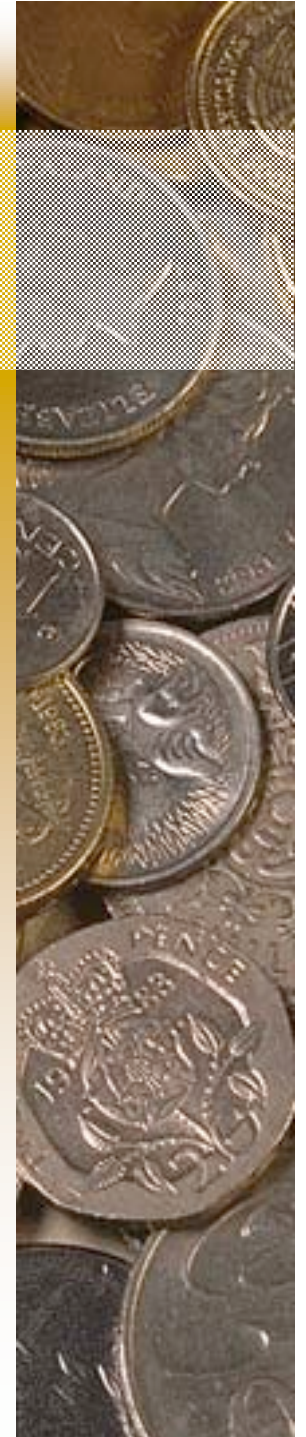
	$\frac{\text{NI}}{\text{Sales}}$	x	$\frac{\text{Sales}}{\text{TA}}$	x	$\frac{\text{TA}}{\text{CE}}$	= ROE.
<b>2003</b>	2.6%	x	2.3	x	2.2	= 13.2%
<b>2004</b>	-1.6%	x	2.0	x	5.2	= -16.6%
<b>2005</b>	3.6%	x	2.0	x	1.8	= 13.0%
<b>Ind.</b>	<b>3.6%</b>	<b>x</b>	<b>2.5</b>	<b>x</b>	<b>2.0</b>	<b>= 18.0%</b>



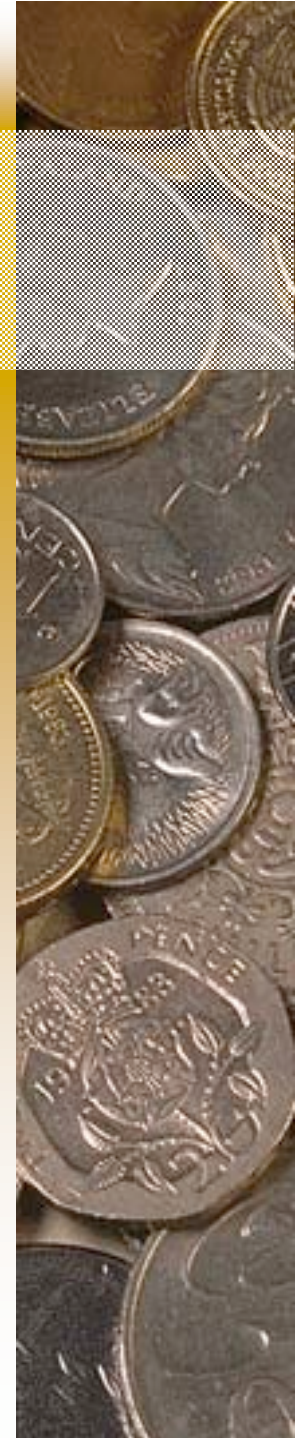
## What are some potential problems and limitations of financial ratio analysis?

- Comparison with industry averages is difficult if the firm operates **many different divisions**.
- “Average” performance is not necessarily good.
- **Seasonal factors** can distort ratios.

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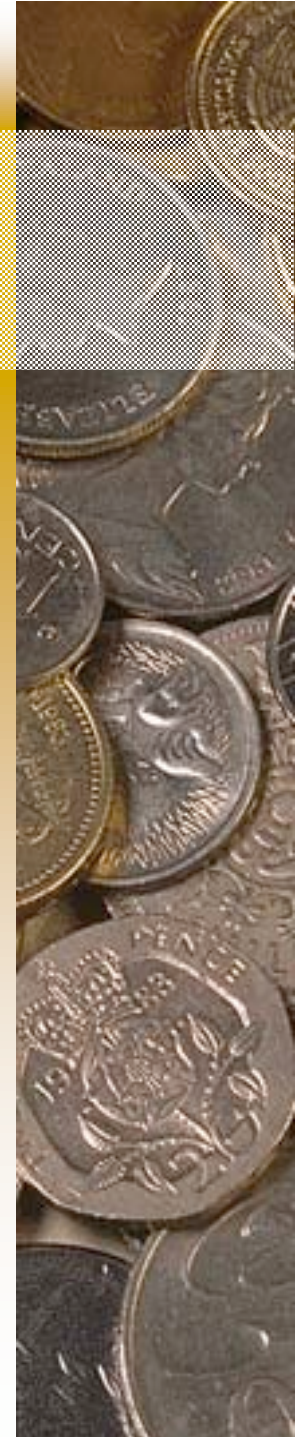
- **Window dressing** techniques can make statements and ratios look better.
- Different accounting and operating practices can distort comparisons.
- Sometimes it is difficult to tell if a ratio value is “good” or “bad.”
- Often, different ratios give different signals, so it is difficult to tell, on balance, whether a company is in a strong or weak financial condition.



## Qualitative factors analysts consider when evaluating likely future financial performance?

- Are the company's revenues tied to a **single customer**?
- To what extent are the company's revenues tied to a **single product**?
- To what extent does the company rely on a **single supplier**?

(More...)



- What percentage of the company's business is generated **overseas**?
- What is the **competitive situation**?
- What does the **future** have in store?
- What is the company's **legal and regulatory environment**?

