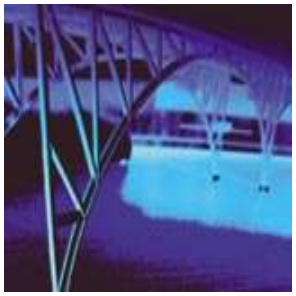
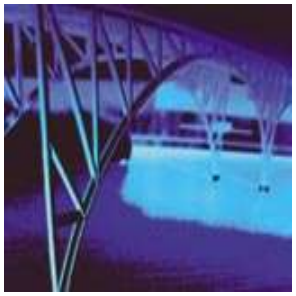


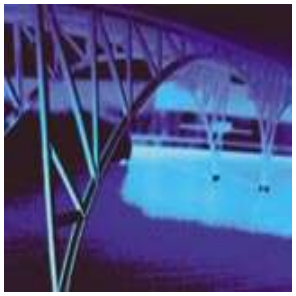
Chapter 6

Financial Statement Analysis



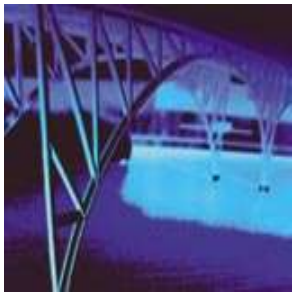
After studying Chapter 6, you should be able to:

- Understand the purpose of basic financial statements and their contents.
- Explain why financial statement analysis is important to the firm and to outside suppliers of capital.
- Define, calculate, and categorize (according to liquidity, financial leverage, coverage, activity, and profitability) the major financial ratios and understand what they can tell us about the firm.
- Define, calculate, and discuss a firm's operating cycle and cash cycle.
- Use ratios to analyze a firm's health and then recommend reasonable alternative courses of action to improve the health of the firm.
- Analyze a firm's return on investment (i.e., "earning power") and return on equity using a DuPont approach.
- Understand the limitations of financial ratio analysis.
- Use trend analysis, common-size analysis, and index analysis to gain additional insights into a firm's performance.



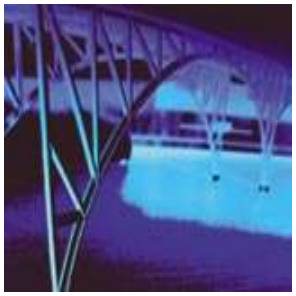
Financial Statement Analysis

- Financial Statements
- A Possible Framework for Analysis
- Balance Sheet Ratios
- Income Statement and Income Statement/Balance Sheet Ratios
- Trend Analysis
- Common-Size and Index Analysis



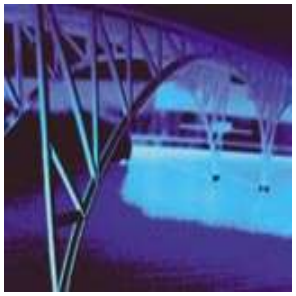
Financial Statement Analysis

- The art of transforming data from financial statements into information that is useful for informed decision making.
- Financial statement analysis is used quite commonly in both external & internal.



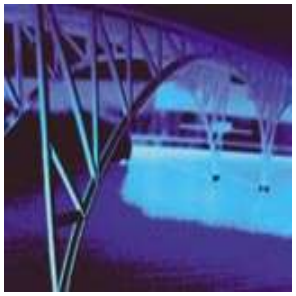
Examples of External Uses of Statement Analysis

- **Trade Creditors** -- Focus on the liquidity of the firm.
- **Bondholders** -- Focus on the long-term cash flow of the firm.
- **Shareholders** -- Focus on the profitability and long-term health of the firm.



Examples of Internal Uses of Statement Analysis

- ***Plan*** **-- Focus on assessing the current financial position and evaluating potential firm opportunities.**
- ***Control*** **-- Focus on return on investment for various assets and asset efficiency.**
- ***Understand*** **-- Focus on understanding how suppliers of funds analyze the firm.**



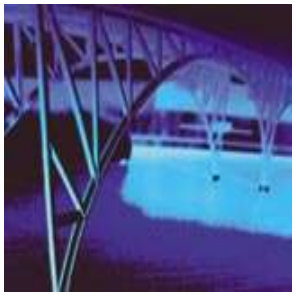
Primary Types of Financial Statements

Balance Sheet

- A summary of a firm's financial position on a given date that shows total assets = total liabilities + owners' equity.

Income Statement

- A summary of a firm's revenues and expenses over a specified period, ending with net income or loss for the period.



Framework for Financial Analysis

1. Analysis of the funds needs of the firm.

Trend / Seasonal Component

How much funding will be required in the future?

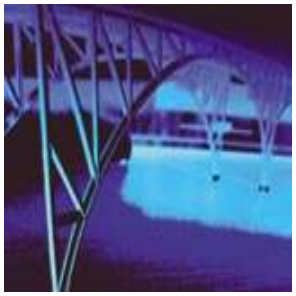
Is there a seasonal component?

Analytical Tools Used

Sources and Uses Statement

Statement of Cash Flows

Cash Budgets



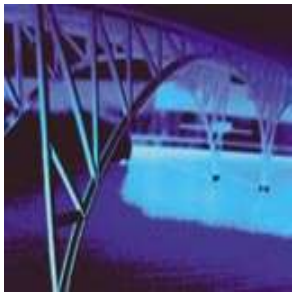
Framework for Financial Analysis

1. Analysis of the funds needs of the firm.
2. Analysis of the financial condition and profitability of the firm.

Health of a Firm

Financial Ratios

1. **Individually**
2. **Over time**
3. **In combination**
4. **In comparison**



Framework for Financial Analysis

1. Analysis of the funds needs of the firm.
2. Analysis of the financial condition and profitability of the firm.
3. Analysis of the business risk of the firm.

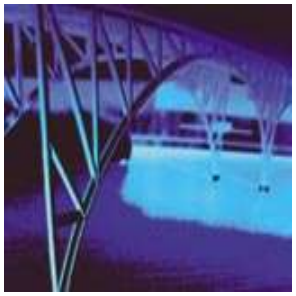
Business risk **relates to the risk inherent in the operations of the firm.**

Examples:

Volatility in sales

Volatility in costs

Proximity to break-even point

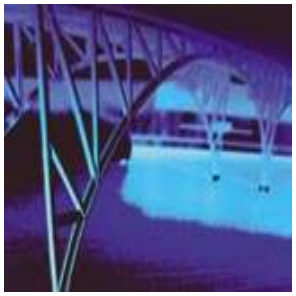


Framework for Financial Analysis

1. Analysis of the funds needs of the firm.
2. Analysis of the financial condition and profitability of the firm.
3. Analysis of the business risk of the firm.

Determining the financing needs of the firm.

A *Financial Manager* must consider <u>all three</u> jointly when determining the financing needs of the firm.

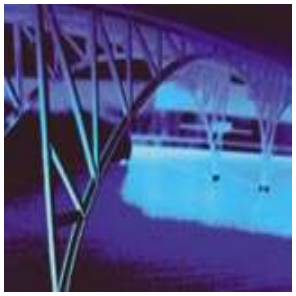


Framework for Financial Analysis

1. Analysis of the funds needs of the firm.
2. Analysis of the financial condition and profitability of the firm.
3. Analysis of the business risk of the firm.

Determining the financing needs of the firm.

Negotiations with suppliers of capital.



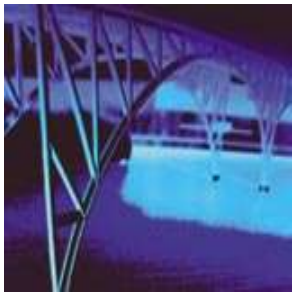
Use of Financial Ratios

A *Financial Ratio* is an index that relates <u>two</u> <u>accounting numbers</u> and is obtained by dividing one number by the other.

<u>Types of Comparisons</u>

Internal Comparisons

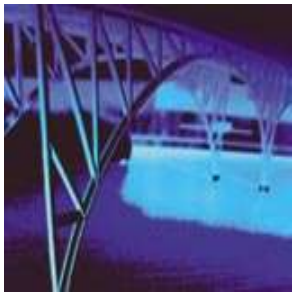
External Comparisons



Internal Comparisons

- **The analyst can compare a present ratio with past and expected future ratios for the same company.**

- **Example :** The Current ratio for the present year could be compared with the current ratio for the previous year end.



External Comparisons and Sources of Industry Ratios

This involves comparing the ratios of one firm with those of *similar* firms or with industry averages.

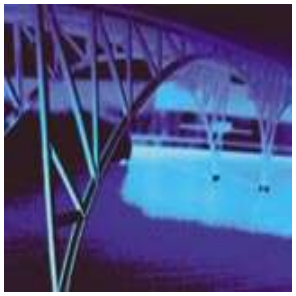
Similarity **is important as one should compare "apples to apples."**

Examples:

Risk Management Association

Dun & Bradstreet

Almanac of Business and Industrial Financial Ratios



Liquidity Ratios

Balance Sheet Ratios

Liquidity Ratios

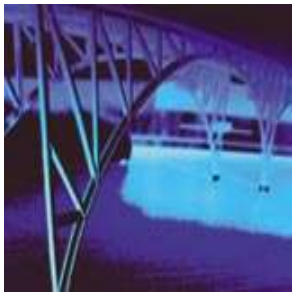
Current

$$\frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Shows a firm's ability to cover its current liabilities with its current assets.

For *Basket Wonders*
December 31, 2007

$$\frac{\$1{,}195}{\$500} = 2.39$$

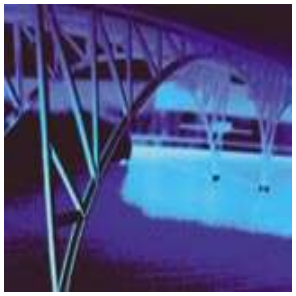


Liquidity Ratio Comparisons

Current Ratio

Year	BW	Industry
2007	2.39	2.15
2006	2.26	2.09
2005	1.91	2.01

Ratio is stronger than the industry average.



Liquidity Ratios

Balance Sheet Ratios

Liquidity Ratios

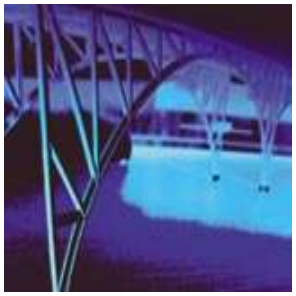
Shows a firm's ability to meet current liabilities with its most liquid assets.

Acid-Test (Quick)

$$\frac{\text{Current Assets - Inv}}{\text{Current Liabilities}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$1{,}195 - \$696}{\$500} = 1.00$$

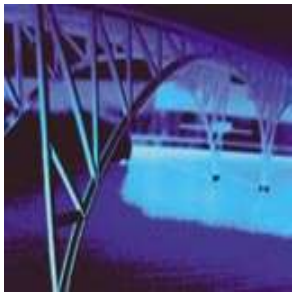


Liquidity Ratio Comparisons

Acid-Test Ratio

Year	BW	Industry
2007	1.00	1.25
2006	1.04	1.23
2005	1.11	1.25

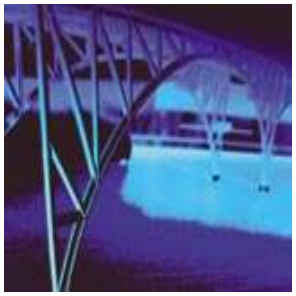
Ratio is weaker than the industry average.



Summary of the Liquidity Ratio Comparisons

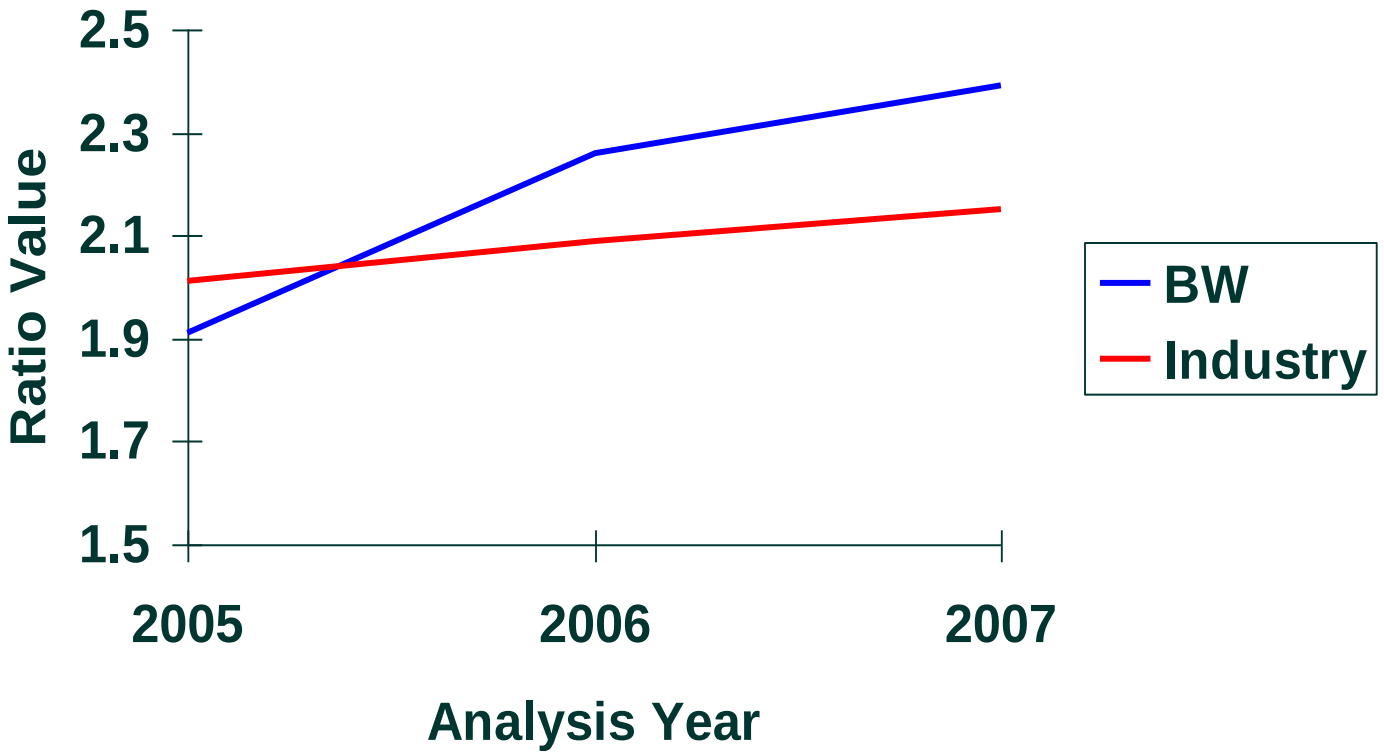
Ratio	BW	Industry
Current	2.39	2.15
Acid-Test	1.00	1.25

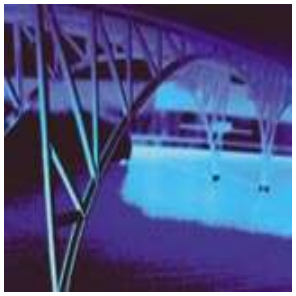
- Strong current ratio and weak acid-test ratio indicates a potential problem in the inventories account.
- Note that this industry has a relatively high level of inventories.



Current Ratio -- Trend Analysis Comparison

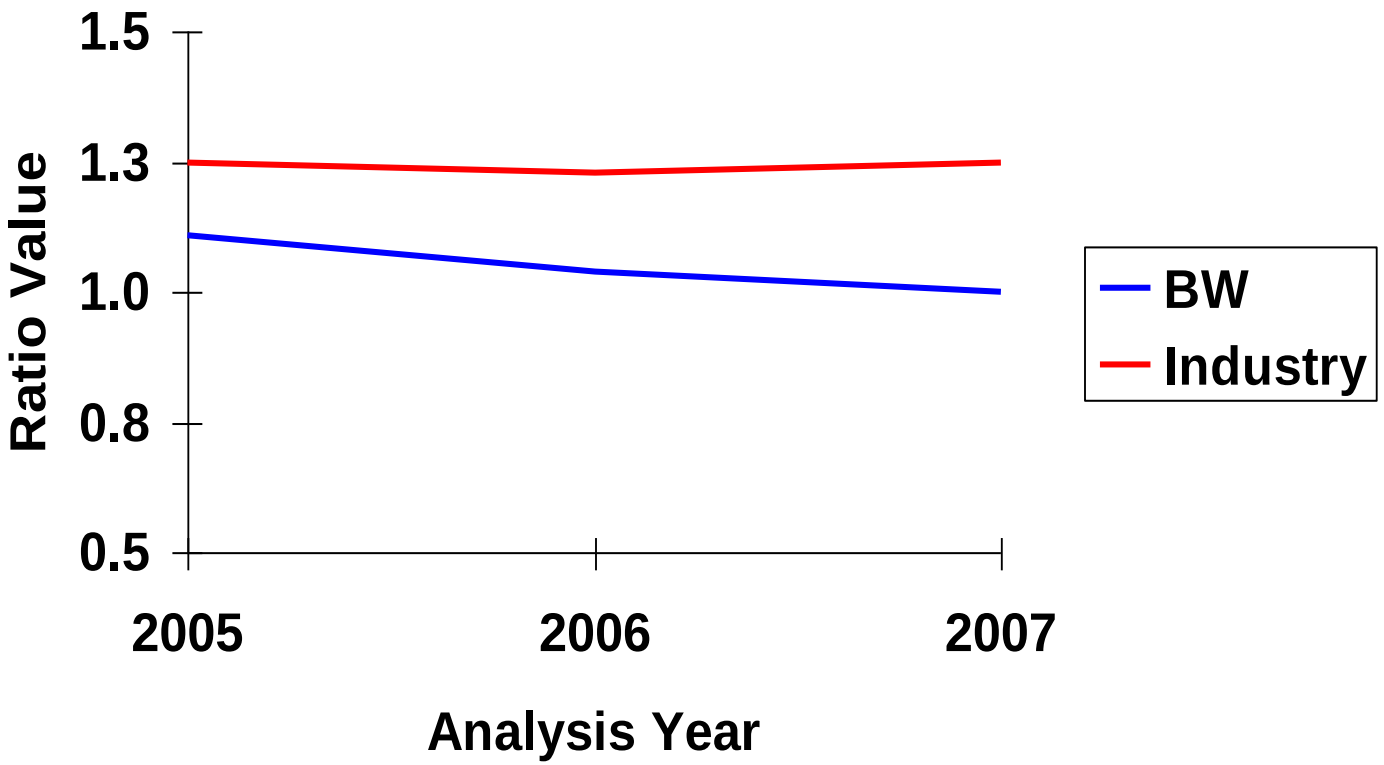
Trend Analysis of Current Ratio

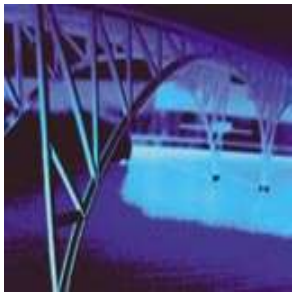




Acid-Test Ratio -- Trend Analysis Comparison

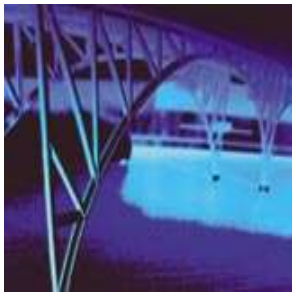
Trend Analysis of Acid-Test Ratio





Summary of the Liquidity Trend Analyses

- The current ratio for *BW* has been rising at the same time the acid-test ratio has been declining.
- The current ratio for the industry has been rising slowly at the same time the acid-test ratio has been relatively stable.
- This indicates that inventories are a significant problem for *BW*.



Financial Leverage Ratios

Balance Sheet Ratios

Financial Leverage Ratios

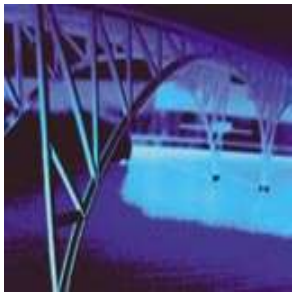
Shows the extent to which the firm is financed by debt.

Debt-to-Equity

$$\frac{\text{Total Debt}}{\text{Shareholders' Equity}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$1{,}030}{\$1{,}139} = .90$$

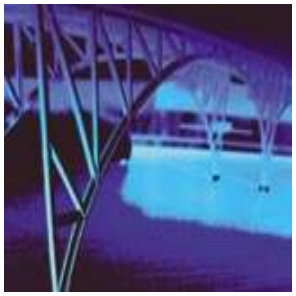


Financial Leverage Ratio Comparisons

Debt-to-Equity Ratio

Year	*BW*	*Industry*
2007	.90	.90
2006	.88	.90
2005	.81	.89

BW has average debt utilization relative to the industry average.



Financial Leverage Ratios

Balance Sheet Ratios

Financial Leverage Ratios

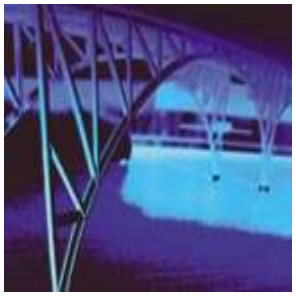
Shows the percentage of the firm's assets that are supported by debt financing.

Debt-to-Total-Assets

$$\frac{\text{Total Debt}}{\text{Total Assets}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$1{,}030}{\$2{,}169} = .47$$

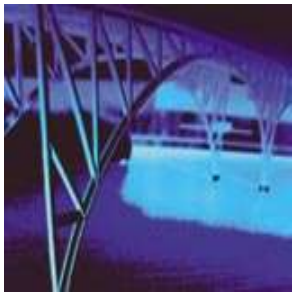


Financial Leverage Ratio Comparisons

Debt-to-Total-Asset Ratio

Year	*BW*	*Industry*
2007	.47	.47
2006	.47	.47
2005	.45	.47

BW has average debt utilization relative to the industry average.



Financial Leverage Ratios

Balance Sheet Ratios

Financial Leverage Ratios

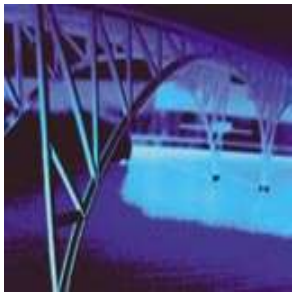
Total Capitalization
(i.e., LT-Debt + Equity)

$$\frac{\text{Long-term Debt}}{\text{Total Capitalization}}$$

Shows the relative importance of long-term debt to the long-term financing of the firm.

For *Basket Wonders*
December 31, 2007

$$\frac{\$530}{\$1,669} = .32$$

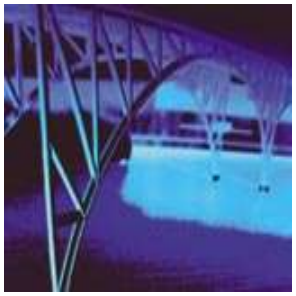


Financial Leverage Ratio Comparisons

Total Capitalization Ratio

Year	BW	Industry
2007	.32	.30
2006	.32	.31
2005	.37	.32

BW has average long-term debt utilization relative to the industry average.



Coverage Ratios

Income Statement Ratios

Coverage Ratios

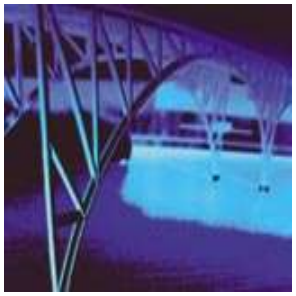
Indicates a firm's ability to cover interest charges.

Interest Coverage

$$\frac{\text{EBIT}}{\text{Interest Charges}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$210}{\$59} = 3.56$$

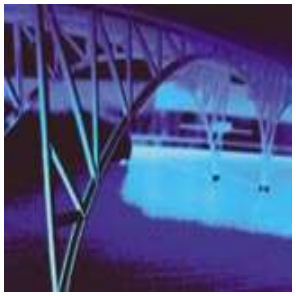


Coverage Ratio Comparisons

Interest Coverage Ratio

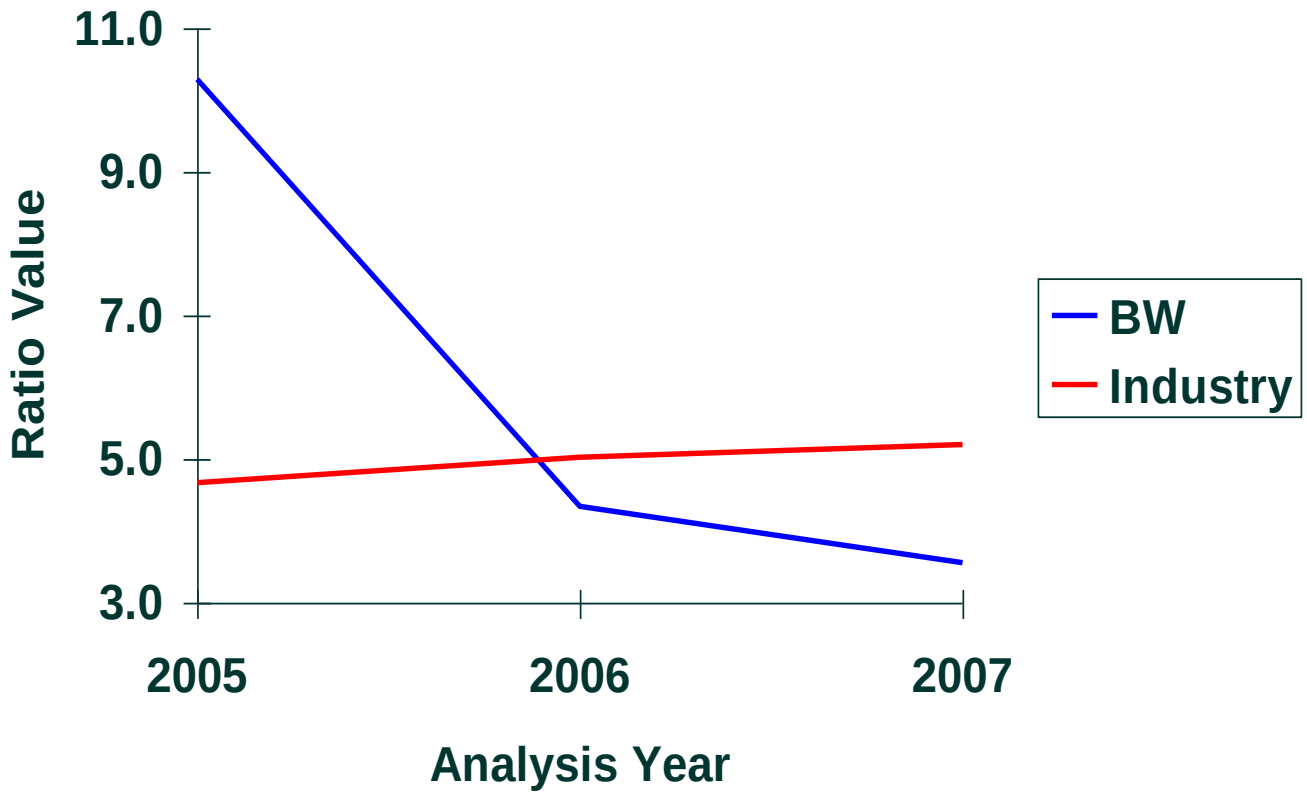
Year	*BW*	*Industry*
2007	3.56	5.19
2006	4.35	5.02
2005	10.30	4.66

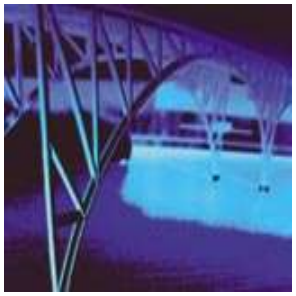
BW has below average interest coverage relative to the industry average.



Coverage Ratio -- Trend Analysis Comparison

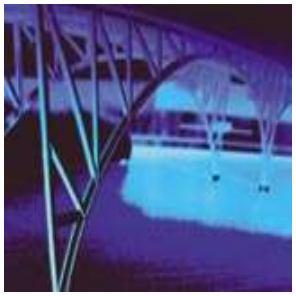
Trend Analysis of Interest Coverage Ratio





Summary of the Coverage Trend Analysis

- The interest coverage ratio for *BW* has been falling since 2005. It has been below industry averages for the past two years.
- This indicates that low earnings (EBIT) may be a potential problem for *BW*.
- Note, we know that debt levels are in line with the industry averages.



Activity Ratios

Income Statement / Balance Sheet Ratios

Activity Ratios

Indicates quality of receivables and how successful the firm is in its collections.

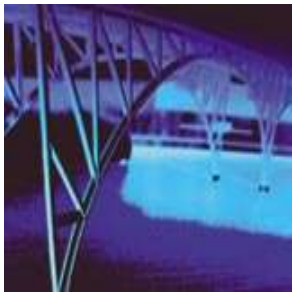
Receivable Turnover

(Assume all sales are credit sales.)

$$\frac{\text{Annual Net Credit Sales}}{\text{Receivables}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$2{,}211}{\$394} = 5.61$$



Activity Ratios

Income Statement / Balance Sheet Ratios

Activity Ratios

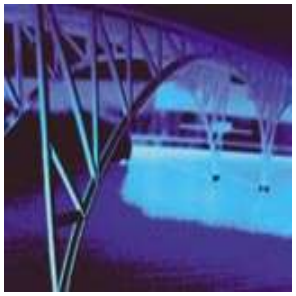
Average number of days that receivables are outstanding. (or RT in days)

Avg Collection Period

$$\frac{\text{Days in the Year}}{\text{Receivable Turnover}}$$

For *Basket Wonders* December 31, 2007

$$\frac{365}{5.61} = 65 \text{ days}$$

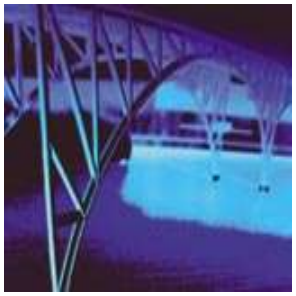


Activity Ratio Comparisons

Average Collection Period

Year	*BW*	*Industry*
2007	65.0	65.7
2006	71.1	66.3
2005	83.6	69.2

BW has improved the average collection period to that of the industry average.



Activity Ratios

Income Statement / Balance Sheet Ratios

Activity Ratios

Indicates the promptness of payment to suppliers by the firm.

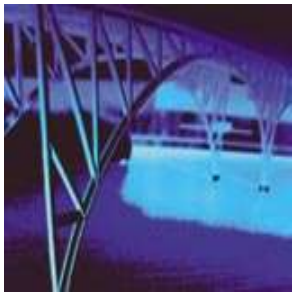
Payable Turnover (PT)

(Assume annual credit purchases = $1,551.)

$$\frac{\text{Annual Credit Purchases}}{\text{Accounts Payable}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$1551}{\$94} = 16.5$$



Activity Ratios

Income Statement / Balance Sheet Ratios

Activity Ratios

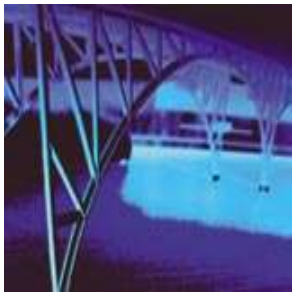
Average number of days that payables are outstanding.

PT in Days

$$\frac{\text{Days in the Year}}{\text{Payable Turnover}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{365}{16.5} = \textit{22.1 days}$$



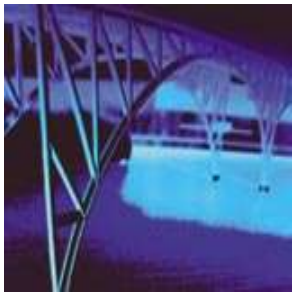
Activity Ratio Comparisons

Payable Turnover in Days

Year	*BW*	*Industry*
2007	22.1	46.7
2006	25.4	51.1
2005	43.5	48.5

BW has improved the PT in Days.

Is this good?



Activity Ratios

Income Statement / Balance Sheet Ratios

Activity Ratios

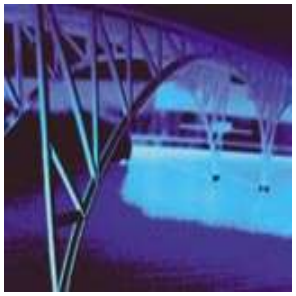
Indicates the effectiveness of the inventory management practices of the firm.

Inventory Turnover

$$\frac{\text{Cost of Goods Sold}}{\text{Inventory}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$1{,}599}{\$696} = 2.30$$

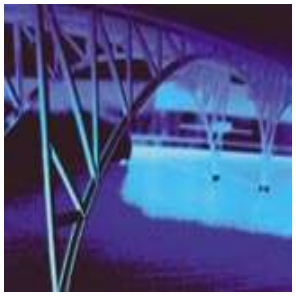


Activity Ratio Comparisons

Inventory Turnover Ratio

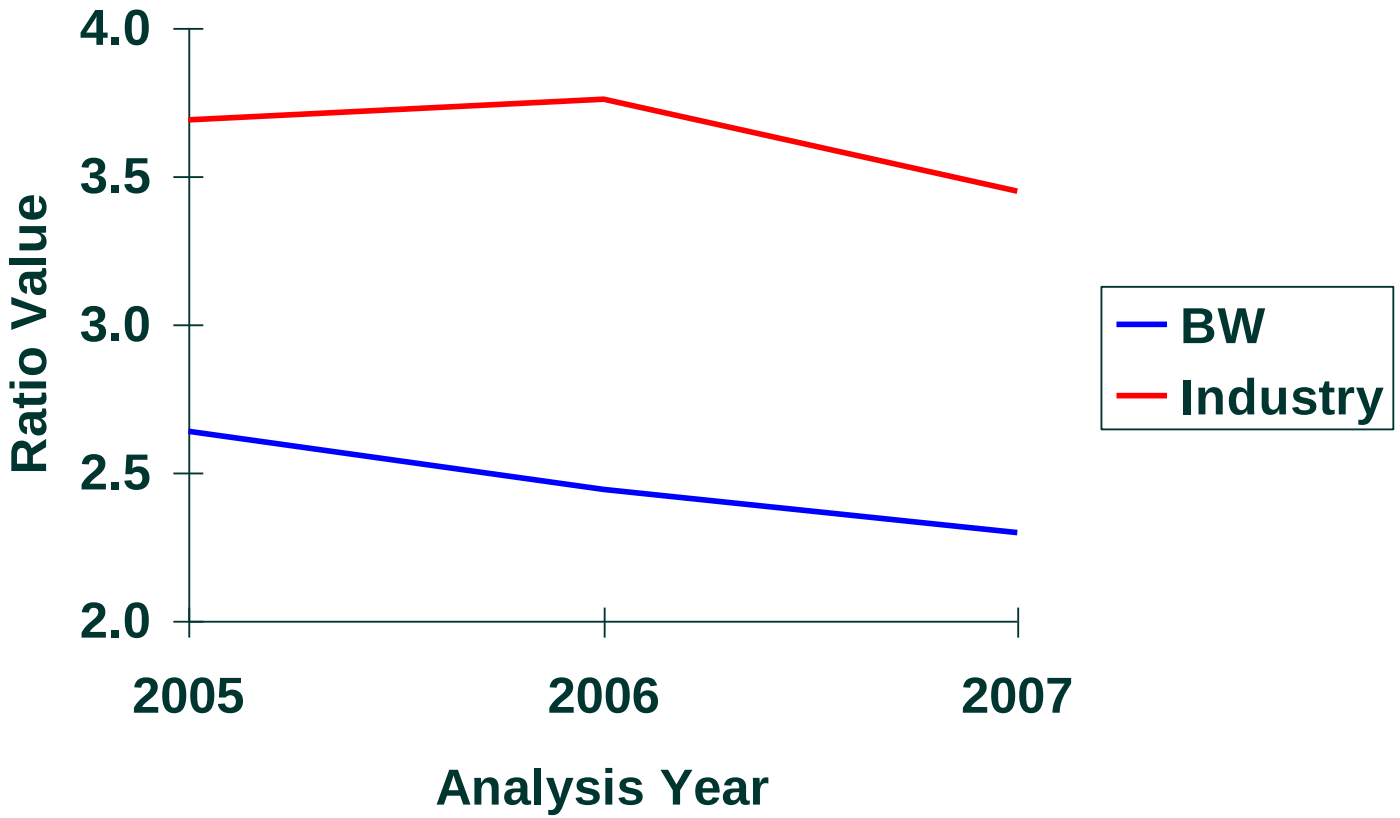
Year	BW	Industry
2007	2.30	3.45
2006	2.44	3.76
2005	2.64	3.69

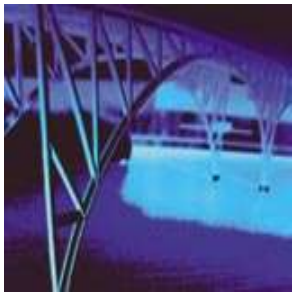
BW has a very poor inventory turnover ratio.



Inventory Turnover Ratio -- Trend Analysis Comparison

Trend Analysis of Inventory Turnover Ratio





Activity Ratios

Income Statement / Balance Sheet Ratios

Activity Ratios

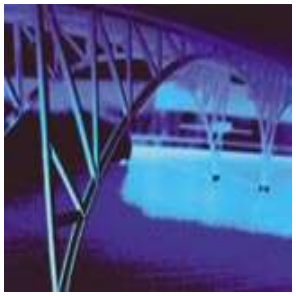
Indicates the overall effectiveness of the firm in utilizing its assets to generate sales.

Total Asset Turnover

$$\frac{\text{Net Sales}}{\text{Total Assets}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$2,211}{\$2,169} = 1.02$$



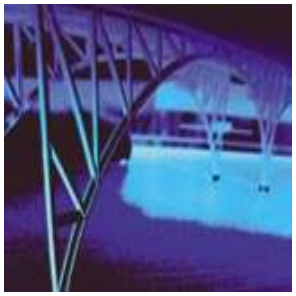
Activity Ratio Comparisons

Total Asset Turnover Ratio

Year	*BW*	*Industry*
2007	1.02	1.17
2006	1.03	1.14
2005	1.01	1.13

BW has a weak total asset turnover ratio.

Why is this ratio considered weak?



Profitability Ratios

Income Statement / Balance Sheet Ratios

Profitability Ratios

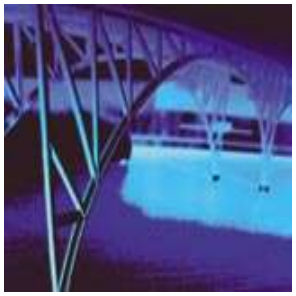
Indicates the efficiency of operations and firm pricing policies.

Gross Profit Margin

$$\frac{\text{Gross Profit}}{\text{Net Sales}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$612}{\$2,211} = .277$$

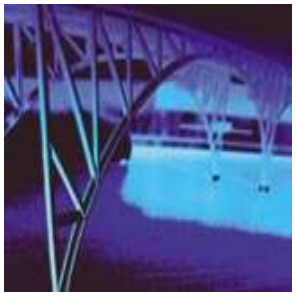


Profitability Ratio Comparisons

Gross Profit Margin

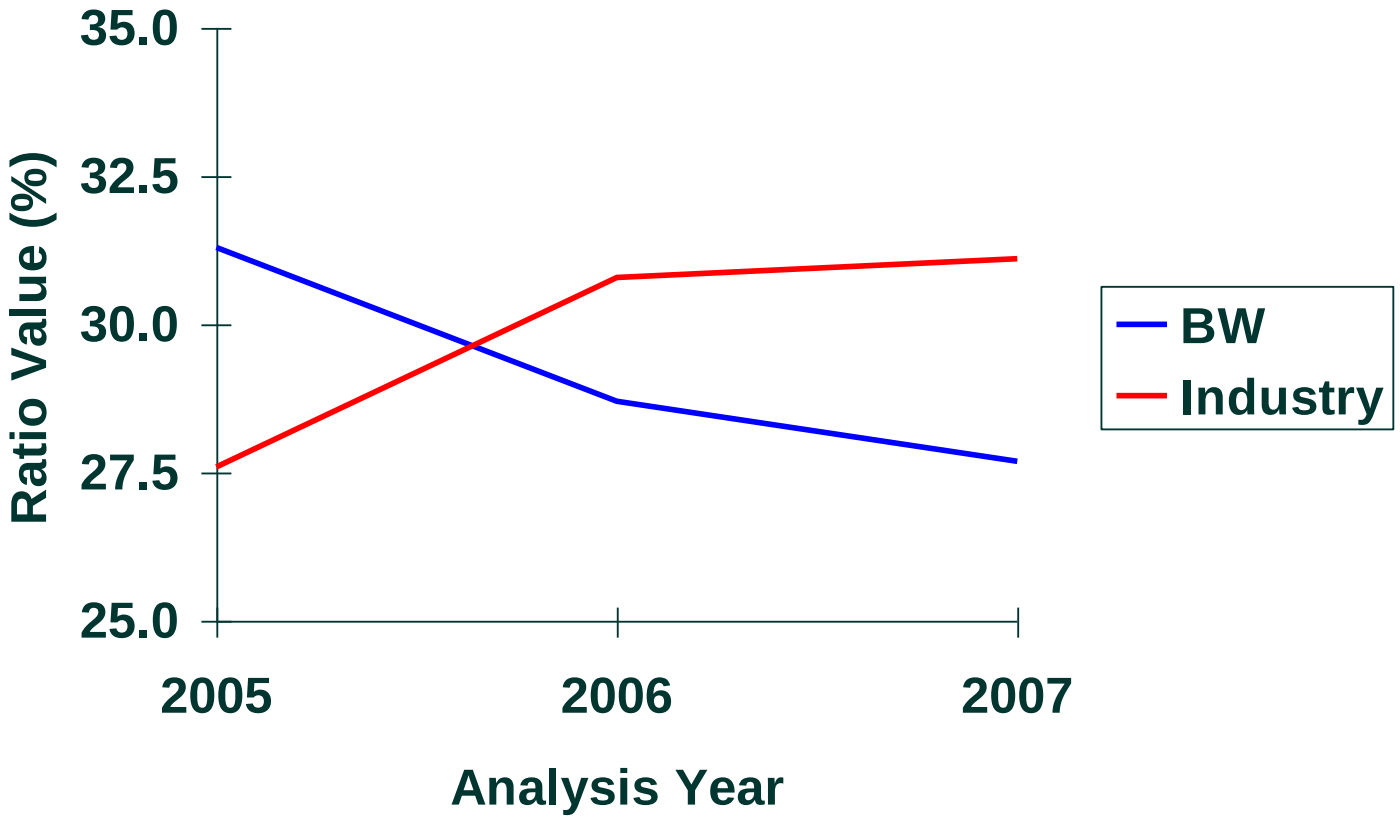
Year	BW	Industry
2007	27.7%	31.1%
2006	28.7	30.8
2005	31.3	27.6

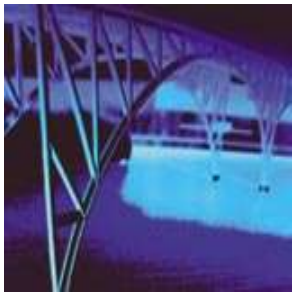
BW has a weak Gross Profit Margin.



Gross Profit Margin -- Trend Analysis Comparison

Trend Analysis of Gross Profit Margin





Profitability Ratios

Income Statement / Balance Sheet Ratios

Profitability Ratios

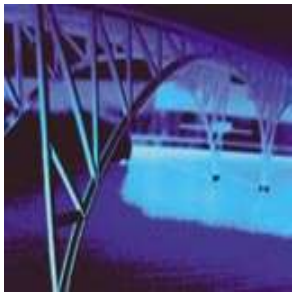
Indicates the firm's profitability after taking account of all expenses and income taxes.

Net Profit Margin

$$\frac{\text{Net Profit after Taxes}}{\text{Net Sales}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$91}{\$2{,}211} = .041$$

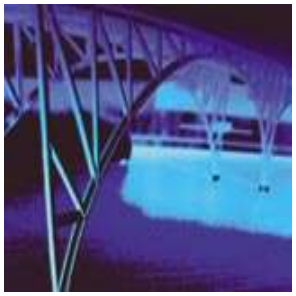


Profitability Ratio Comparisons

Net Profit Margin

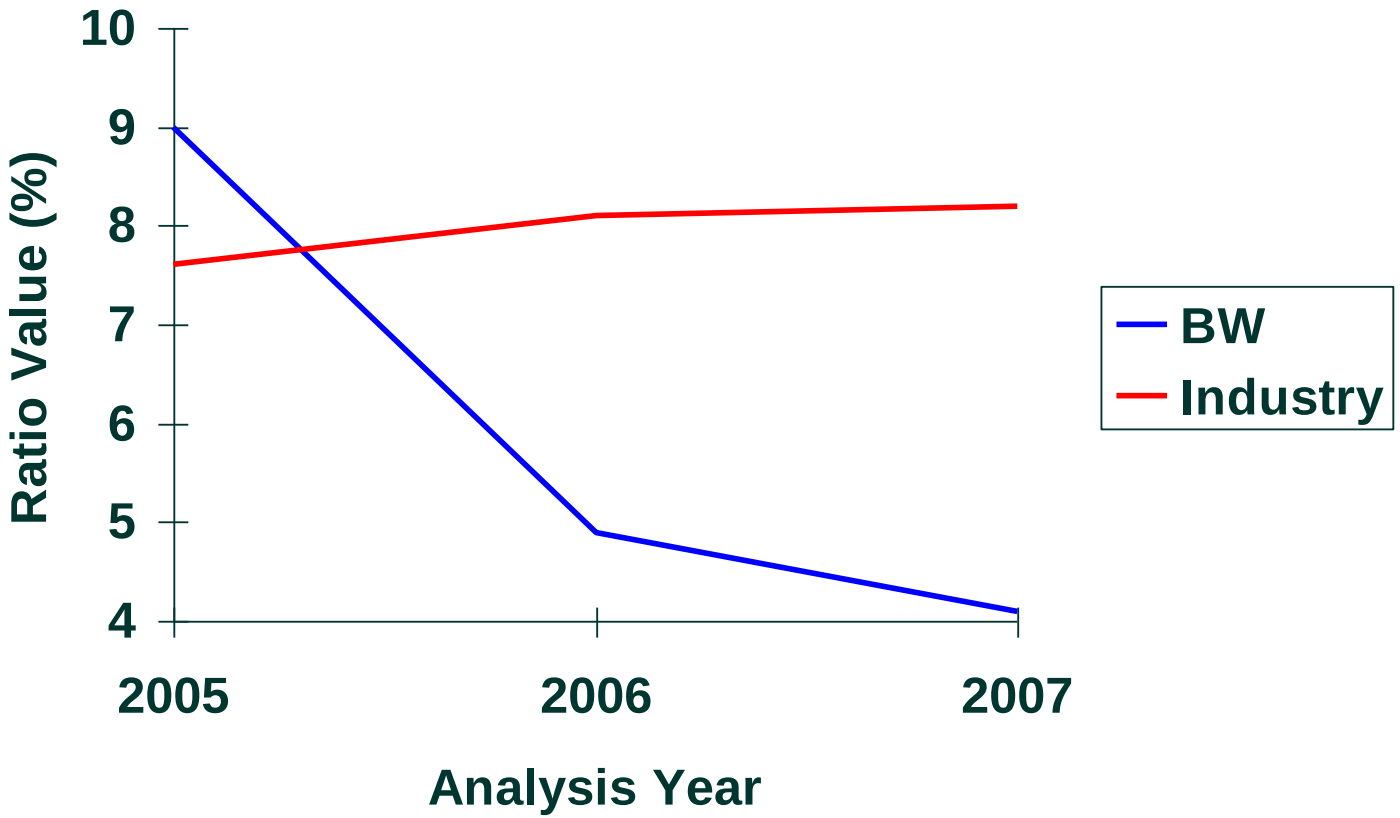
Year	*BW*	*Industry*
2007	4.1%	8.2%
2006	4.9	8.1
2005	9.0	7.6

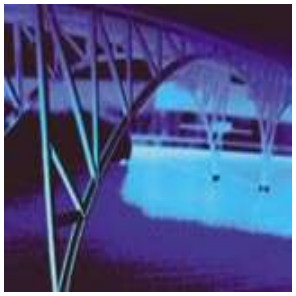
BW has a poor Net Profit Margin.



Net Profit Margin -- Trend Analysis Comparison

Trend Analysis of Net Profit Margin





Profitability Ratios

Income Statement / Balance Sheet Ratios

Profitability Ratios

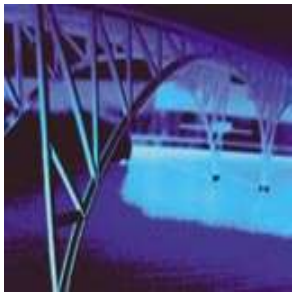
Indicates the profitability on the assets of the firm (after all expenses and taxes).

Return on Investment

$$\frac{\text{Net Profit after Taxes}}{\text{Total Assets}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$91}{\$2{,}160} = .042$$

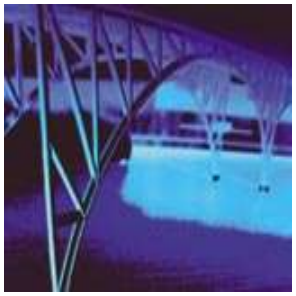


Profitability Ratio Comparisons

Return on Investment

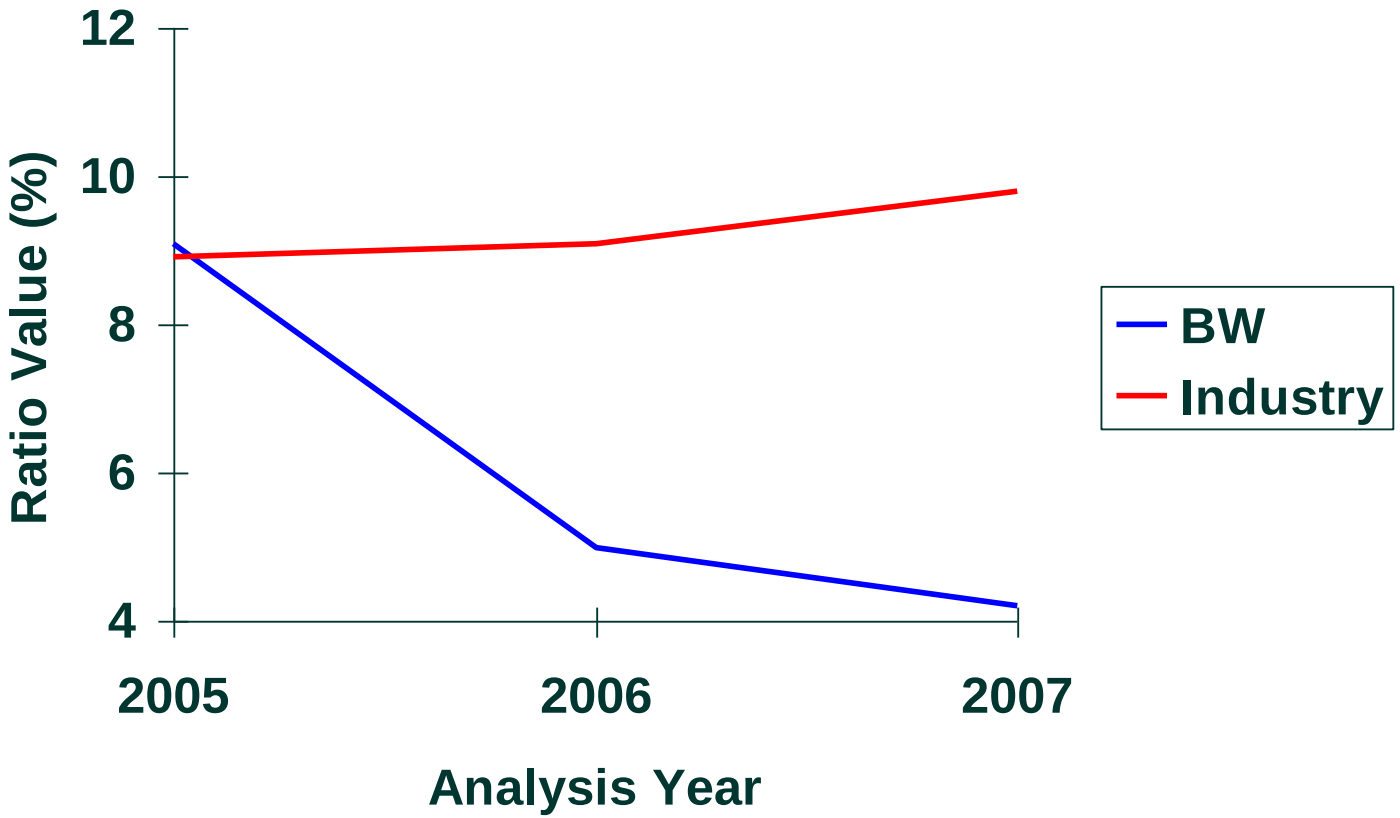
Year	BW	Industry
2007	4.2%	9.8%
2006	5.0	9.1
2005	9.1	10.8

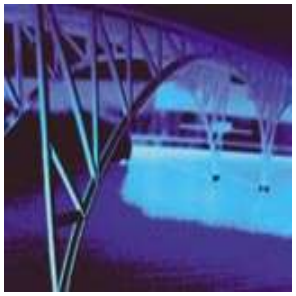
BW has a poor Return on Investment.



Return on Investment – Trend Analysis Comparison

Trend Analysis of Return on Investment





Profitability Ratios

Income Statement / Balance Sheet Ratios

Profitability Ratios

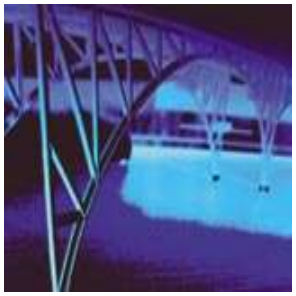
Indicates the profitability to the shareholders of the firm (after all expenses and taxes).

Return on Equity

$$\frac{\text{Net Profit after Taxes}}{\text{Shareholders' Equity}}$$

For *Basket Wonders*
December 31, 2007

$$\frac{\$91}{\$1{,}139} = .08$$

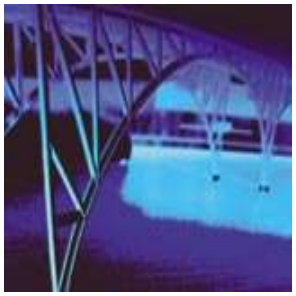


Profitability Ratio Comparisons

Return on Equity

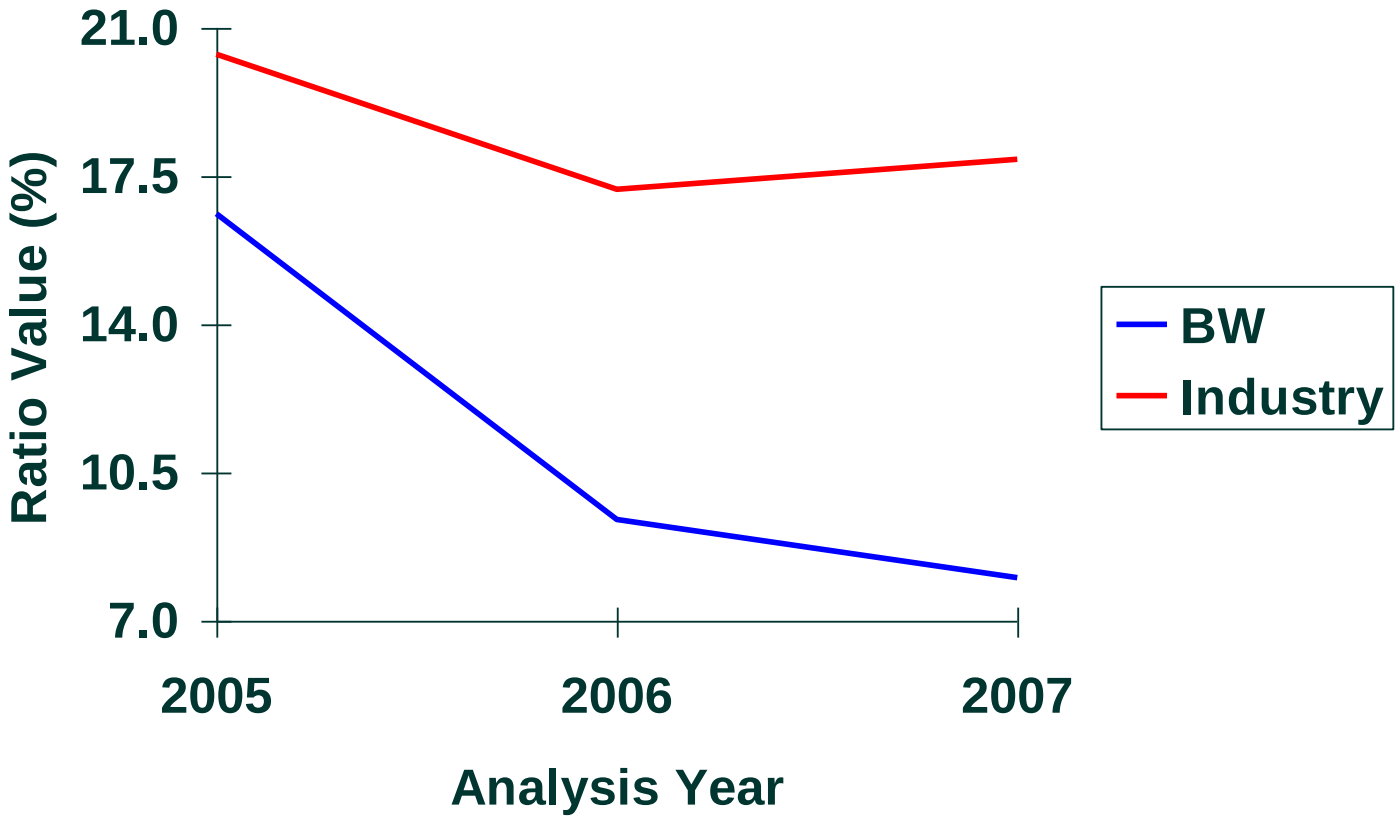
Year	BW	Industry
2007	8.0%	17.9%
2006	9.4	17.2
2005	16.6	20.4

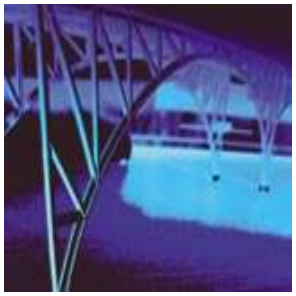
BW has a poor Return on Equity.



Return on Equity -- Trend Analysis Comparison

Trend Analysis of Return on Equity





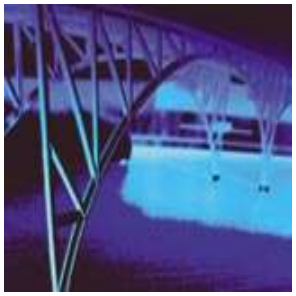
Return on Investment and the Du Pont Approach

Earning Power = Sales profitability X Asset efficiency

ROI = Net profit margin X Total asset turnover

ROI_{2007} = .041 x 1.02 = .042 or 4.2%

$ROI_{Industry}$ = .082 x 1.17 = .098 or 9.8%



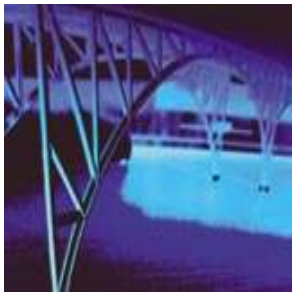
Return on Equity and the Du Pont Approach

Return On Equity = Net profit margin X
Total asset turnover X
Equity Multiplier

$$\text{Equity Multiplier} = \frac{\text{Total Assets}}{\text{Shareholders' Equity}}$$

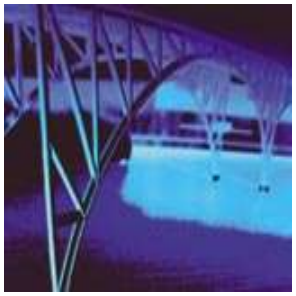
ROE_{2007} = .041 x 1.02 x 1.90 = .080

$ROE_{Industry}$ = .082 x 1.17 x 1.88 = .179



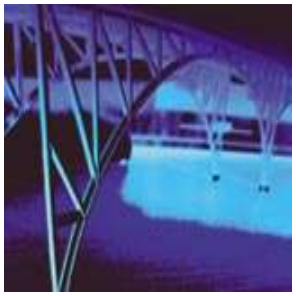
Summary of the Profitability Trend Analyses

- The profitability ratios for *BW* have *ALL* been falling since 2005. Each has been below the industry averages for the past three years.
- This indicates that COGS and administrative costs may both be too high and a potential problem for *BW*.
- Note, this result is consistent with the low interest coverage ratio.



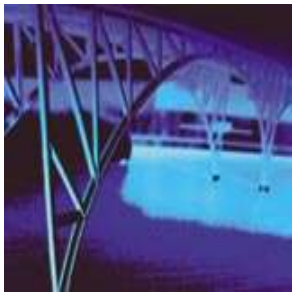
Summary of Ratio Analyses

- Inventories are too high.
- May be paying off creditors (accounts payable) too soon.
- COGS may be too high.
- Selling, general, and administrative costs may be too high.



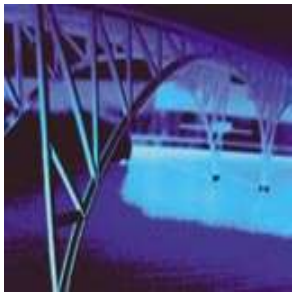
Common-size Analysis

An analysis of *percentage* financial statements where all balance sheet items are divided by *total assets* and all income statement items are divided by *net sales* or *revenues*.



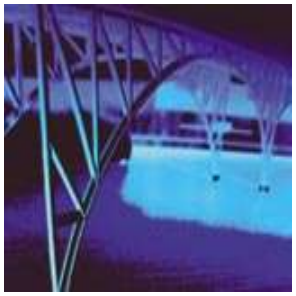
Basket Wonders' Common Size Balance Sheets

	Regular (thousands of $)			Common-Size (%)		
Assets	2005	2006	2007	2005	2006	2007
Cash	148	100	90	12.10	4.89	4.15
AR	283	410	394	23.14	20.06	18.17
Inv	322	616	696	26.33	30.14	32.09
Other CA	10	14	15	0.82	0.68	0.69
Tot CA	763	1,140	1,195	62.39	55.77	55.09
Net FA	349	631	701	28.54	30.87	32.32
LT Inv	0	50	50	0.00	2.45	2.31
Other LT	111	223	223	9.08	10.91	10.28
Tot Assets	1,223	2,044	2,169	100.0	100.0	100.0



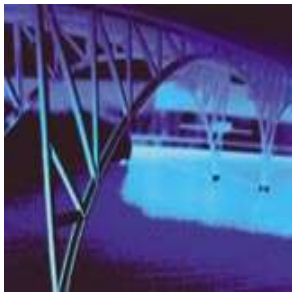
Basket Wonders' Common Size Balance Sheets

	Regular (thousands of $)			Common-Size (%)		
Liab+Equity	2005	2006	2007	2005	2006	2007
Note Pay	290	295	290	23.71	14.43	13.37
Acct Pay	81	94	94	6.62	4.60	4.33
Accr Tax	13	16	16	1.06	0.78	0.74
Other Accr	15	100	100	1.23	4.89	4.61
Tot CL	399	505	500	32.62	24.71	23.05
LT Debt	150	453	530	12.26	22.16	24.44
Equity	674	1,086	1,139	55.11	53.13	52.51
Tot L+E	1,223	2,044	2,169	100.0	100.0	100.0



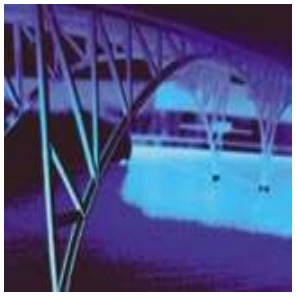
Basket Wonders' Common Size Income Statements

	Regular (thousands of $)			Common-Size (%)		
	2005	2006	2007	2005	2006	2007
Net Sales	1,235	2,106	2,211	100.0	100.0	100.0
COGS	849	1,501	1,599	68.7	71.3	72.3
Gross Profit	386	605	612	31.3	28.7	27.7
Adm.	180	383	402	14.6	18.2	18.2
EBIT	206	222	210	16.7	10.5	9.5
Int Exp	20	51	59	1.6	2.4	2.7
EBT	186	171	151	15.1	8.1	6.8
EAT	112	103	91	9.1	4.9	4.1
Cash Div	50	50	50	4.0	2.4	2.3



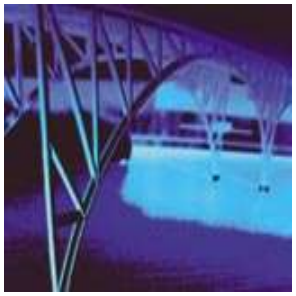
Index Analyses

An analysis of *percentage* financial statements where all balance sheet or income statement figures for a base year equal 100.0 (percent) and subsequent financial statement items are expressed as percentages of their values in the base year.



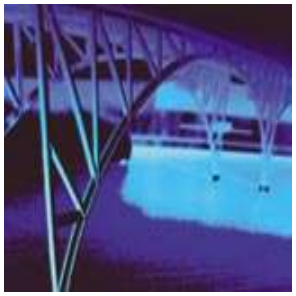
Basket Wonders' Indexed Balance Sheets

	Regular (thousands of $)			Indexed (%)		
Assets	2005	2006	2007	2005	2006	2007
Cash	148	100	90	100.0	67.6	60.8
AR	283	410	394	100.0	144.9	139.2
Inv	322	616	696	100.0	191.3	216.1
Other CA	10	14	15	100.0	140.0	150.0
Tot CA	763	1,140	1,195	100.0	149.4	156.6
Net FA	349	631	701	100.0	180.8	200.9
LT Inv	0	50	50	100.0	inf.	inf.
Other LT	111	223	223	100.0	200.9	200.9
Tot Assets	1,223	2,044	2,169	100.0	167.1	177.4



Basket Wonders' Indexed Balance Sheets

	Regular (thousands of $)			Indexed (%)		
Liab+Equity	2005	2006	2007	2005	2006	2007
Note Pay	290	295	290	100.0	101.7	100.0
Acct Pay	81	94	94	100.0	116.0	116.0
Accr Tax	13	16	16	100.0	123.1	123.1
Other Accr	15	100	100	100.0	666.7	666.7
Tot CL	399	505	500	100.0	126.6	125.3
LT Debt	150	453	530	100.0	302.0	353.3
Equity	674	1,086	1,139	100.0	161.1	169.0
Tot L+E	1,223	2,044	2,169	100.0	167.1	177.4



Basket Wonders' Indexed Income Statements

	Regular (thousands of $)			Indexed (%)		
	2005	2006	2007	2005	2006	2007
Net Sales	1,235	2,106	2,211	100.0	170.5	179.0
COGS	849	1,501	1,599	100.0	176.8	188.3
Gross Profit	386	605	612	100.0	156.7	158.5
Adm.	180	383	402	100.0	212.8	223.3
EBIT	206	222	210	100.0	107.8	101.9
Int Exp	20	51	59	100.0	255.0	295.0
EBT	186	171	151	100.0	91.9	81.2
EAT	112	103	91	100.0	92.0	81.3
Cash Div	50	50	50	100.0	100.0	100.0