Fundamental Analysis

Analysis of Economy

Widely accepted that there is a strong relationship between the aggregate economy and the stock market

- ☛ the price of a given stock reflects investor expectations as to how issuing firm will perform
- ☛ performance of firm is affected by overall economy
- ☛ National Bureau of Economic Research (NBER) has classified numerous economic series into three groups
  - leading indicators
  - coincident indicators
  - lagging indicators
- ☛ stock prices are one of the better leading indicators
  - stock prices reflect <u>expectations</u> of earnings and dividends
    - ⇨ estimates of future earnings based on future economic activity
    - ⇨ some leading indicator series -- corporate earnings, profit margins, and money supply -- result in rapid adjustments in stock prices
    - ⇨ such indicators are thus leading indicators of stock prices
- ☛ ways to use economic behavior in predicting stock prices
  - find a series that leads the economy by more than stock prices
    - ⇨ no consistent series has been found
  - stock prices usually do not decline greatly unless a majority of other leading indicators are declining
    - ⇨ sinking stock prices, with few other leading indicators declining, may indicate short run movement
      - ▶ good time to buy
    - ⇨ rising stock prices, with few other leading indicators rising, may indicate short run movement
      - ▶ good time to sell

Interest Rate Movements

- ☛ Unless risk factors change, bond prices are determined almost completely by market interest rates
  - interest rates influenced by combination of economic conditions and actions of the Federal Reserve System
    - ⇨ more consistent relationship between economic activity and bond prices than between economic activity and stock prices
  - historically the index of industrial production has been a fairly accurate predictor of interest rate movements

Business Cycles

- ☛ broadest measure of the overall economy is the Gross National Product
- ☛ the economy has experienced cycles of growth and decline of varying length and varying height and depth
  - recession conventionally thought to hurt firms producing durable goods (automobiles, major appliances, goods involved in home-building) - cyclical industries
  - producers of staple items (food and drugs) which are essential at all times are less affected by business cycles (noncyclical industries)
- ☛ effects of inflation

Analysis of Industry

Permanence of industry

- ☛ some businesses subject to displacement by technological development
- ☛ other businesses not subject to substitution

Growth of industry

- ☛ advantages of industry growing vigorously
  - little occasion for cut-throat competition
  - opportunity for stockholders to add profitably to their investments from time to time
  - opportunity for early arrivals in growing industry to develop specialty products, etc.

Stability of sales and earnings

Competitive conditions

- ☛ lack of effective competition would probably indicate dangerous unstable condition
- ☛ desire stable marketing and pricing situation permitting reasonable profit margins

Labor relations

- ☛ best industry from investors viewpoint are those in which
  - unionism is weak and seems likely to remain so
  - labor costs represent only small portion of costs of operations
  - labor has a tradition of reasonable attitudes
  - mechanization provides a feasible alternative

Governmental attitudes

- ☛ government intervention in an industry is of major concern to investors

Immediate outlook for sales and earnings

Analysis of Company

Size, leadership, dominance

- ☛ larger firms in industry likely to afford the best-quality opportunities for security investments
  - such firms have diversification of lines, production facilities, and sales outlets

Growth

- ☛ Factors producing growth are likely to benefit securityholders
  - good management
  - good products
  - good service to customers

Product line diversification

- ☛ the loss of a single contract or deterioration of a single market will not devastate the company

Product development and research

- ☛ most successful corporations have devoted great attention to research and development

Brands, patents, goodwill, established position

- ☛ intangible assets far more difficult for competitors to reproduce than tangible ones

Modernity, efficiency, integration

- ☛ concern remains profitable only if its plants are efficient and its methods modern

Analysis of Financial Statements

Three major financial statements

- ☛ Balance Sheet
  - a summary of the assets, liabilities, and owners' equity of an entity as of a given date
- ☛ Income Statement
  - a summary of the revenues and expenses of an entity for a given period of time
- ☛ Statement of Cash Flows
  - a summary of cash inflows and outflows for a period of time

Realize

- ☛ Asset valuations are based upon historical cost, not current fair market value
- ☛ Revenue is recorded on "accrual" basis, rather than cash basis; thus revenue is recognized when goods or services are sold -- typically before cash is received.

Analysis of Financial Statements

Percentage Financial Statement Analysis

Vertical Analysis - Income Statement

Express the components of the income statement as a percentage of total sales

Hamilton Burger Company
Consolidated Statement of Income
(thousands of dollars except per share data)

	52 weeks ended October 28, 20x3		52 weeks ended October 29, 20x2	
	Amount	Percent	Amount	Percent
Sales and other operating revenues, less returns and allowances	$1,349,861	100.0	$1,190,447	100.0
Cost of products sold, including delivery expense but excluding items below	1,156,452	85.7	999,245	83.9
Marketing and administrative expenses ...	98,903	7.3	87,793	7.4
Depreciation and amortization	18,783	1.4	16,646	1.4
Pension expense	16,830	1.2	14.891	1.3
Interest on long-term debt	2,591	.2	2,926	.2
Other interest expense	1,014	.1	762	.1
Taxes (except income and social security ..	4,355	.3	5,761	.5
	1,298,928	96.2	1,128,024	94.8
INCOME BEFORE INCOME TAXES	50,933	3.8	62,423	5.2
Income Taxes	24,900	1.9	27,400	2.3
NET INCOME	$ 26,033	1.9	$ 35,023	2.9

The percentages could be compared against

1. **subjective standard** - a standard developed on the basis of past knowledge of similar situations
2. **goals/budgets** - the periodic actual to budget comparison reveals how the firm actually performed relative to how the firm said it would perform
3. **industry performance** - comparison of a company to either a similar company or to an industry average
4. **historical performance** - compare the current operating performance of the business firm with its prior operational results

Hamilton Burger Company
Consolidated Balance Sheet

(amounts in thousands of dollars)

	October 28, 20x3		October 29, 20x2	
ASSETS	Amount	Percent	Amount	Percent
CURRENT ASSETS:				
Cash	$ 29,208	7.3	$ 18,556	4.9
Accounts receivable (net)	51,786	12.8	52,857	14.0
Other receivables	9,805	2.4	8,753	2.3
Inventories	65,511	16.2	60,664	16.1
Prepaid expenses	3,983	1.0	3,723	1.0
Total current assets	160,293	39.7	144,553	38.3
OTHER ASSETS:				
Investments in and advances to affiliated companies	18,317	4.5	18,937	5.0
Patents, trade names and other intangibles, less amortization	1,129	.3	1,251	.4
Miscellaneous	1,313	.3	1,225	.3
	20,759	5.1	21,413	5.7
PROPERTIES:				
Land	7,736	1.9	7,420	2.0
Buildings and improvements	180,860	44.8	167,832	41.4
Machinery and equipment	171,955	42.6	159,935	42.3
	360,551	89.3	335,187	88.7
Accumulated depreciation	137,755	(34.1)	123,419	(32.7)
	222,796	55.2	211,768	56.0
	403,848	100.0	377,734	100.0
LIABILITIES AND STOCKHOLDERS' EQUITY				
CURRENT LIABILITIES:				
Accounts payable	$ 15,104	3.7	$ 13,934	3.7
Accrued expenses	40,764	10.1	38,647	10.2
Pension plan contributions	15,515	3.8	13,707	3.6
Dividend payable	3,277	.8	3,258	.9
Income taxes	8,274	2.1	5,643	1.5
Total current liabilities	82,934	20.5	75,189	19.9
LONG TERM DEBT	32,819	8.1	33,528	8.9
DEFERRED COMPENSATION	3,631	.9	3,026	.8
STOCKHOLDERS' EQUITY				
Preferred stock	---	-	---	-
Common stock	72,820	18.0	72,411	19.2
Additional paid-in capital	1,047	.3	244	.1
Retained earnings	181,979	45.1	169,037	44.7
Total stockholders' equity	255,846	63.4	241,692	64.0
	403,848	100.0	377,734	100.0

Horizontal Analysis - Income Statement

Compare the results of the current year for each component of the income statement against the results of the prior year

Hamilton Burger Company
Consolidated Statement of Income
(thousands of dollars except per share data)

	52 weeks ended		Increase (Decrease) 20x3 over 20x2	
	October 28, 20x3	October 29, 20x2	Amount	Percent
Sales and other operating revenues, less returns and allowances	$1,349,861	$1,190,447	$ 159,414	13.4
Cost of products sold, including delivery expense but excluding items below	1,156,452	999,245	157,307	15.7
Marketing and administrative expenses	98,903	87,793	11,110	12.7
Depreciation and amortization	18,783	16,646	2,137	12.8
Pension expense	16,830	14.891	1,939	13.0
Interest on long-term debt	2,591	2,926	(335)	(11.4)
Other interest expense	1,014	762	252	33.1
Taxes (except income and social security	4,355	5,761	(1,406)	(24.4)
	1,298,928	1,128,024	170,904	15.2
INCOME BEFORE INCOME TAXES	50,933	62,423	(11,490)	(18.4)
Income Taxes	24,900	27,400	(2,500)	(9.1)
NET INCOME	$ 26,033	$ 35,023	(8,990)	(25.7)

Analysis:

Note that a large percentage change pertaining to a small dollar amount (e.g., other interest expense) might be less important than a smaller percentage change pertaining to a large dollar amount (e.g. cost of products sold)

Limitations of Percentage Financial Statement Analysis

When comparing the current performance of a company against the current performance of other companies or the industry, the following limitations of the procedures and data should be kept in mind:

1. comparison between companies is difficult because of different operating characteristics such as the composition and extent of product lines, methods of operation, size, method of financing, and geographical area
2. other companies may use different accounting procedures (e.g. different inventory valuation methods or different depreciation methods), resulting in percentages that are not comparable
3. the industry averages need not indicate a desirable level of performance because the averages could be the result of combining efficient as well as inefficient operating companies
4. financial statements are expressed in monetary terms, yet there are many valuable characteristics, such as the quality of management, that are not readily quantifiable
5. the managements of different companies may have different objectives. For example, some wish to obtain long-term steady growth rate. Others look for economic stability, and still others attempt to earn quick, high profits. The financial statements will not disclose these differing objectives, and it is impossible, therefore, to judge management's success in obtaining its objectives

When comparing the current performance of a company against the past performance of the same company, the following limitations of the procedures and data should be kept in mind:

1. changes in accounting procedures may have significant effects on the percentages that are calculated
2. financial statements, and thus the percentages calculated from such financial statements, are influenced by estimates of future events
3. the effects of inflation are largely ignored in the financial statements
4. the base year used to calculate percentage changes may not be typical or representative for some items on the statements
5. firms change over time, especially in the extent and composition of their product line. A comparison of the results for one year versus another year may reveal changes which are indicative of changes in the composition of the firm rather than changes in the financial conditions of the firm
6. a large percentage change for a small dollar amount may not be as significant as a small percentage change for a large dollar amount
7. the various percentages that are calculated do not indicate <u>why</u> there has been a change over time

Ratio Analysis

Factors to be considered
Short-term solvency
Operating efficiency
Long-term solvency

Short-term solvency

Current ratio

Current Assets/Current Liabilities

160,293/82,934 = 1.93 Note: industry average 2.18

Analysis
1. Rule of thumb, 2:1 or better is desirable
   a. if ratio is too low, solvency is jeopardized
   b. if too high, earnings lower than they could be if we used "productive" assets (typically current assets are not as productive as plant assets)
   c. acceptable ratio depends on nature of industry
2. Limitations
   a. doesn't indicate composition of current assets (certain current assets are more liquid than others)
   b. susceptible to "window dressing" (an 8:6 ratio can be improved to 4:2 by using 4 current assets to retire 4 current liabilities)
   c. due to seasonal nature of firms business, present current ratio may not be representative of usual current ratio for company

Acid-test (quick) ratio

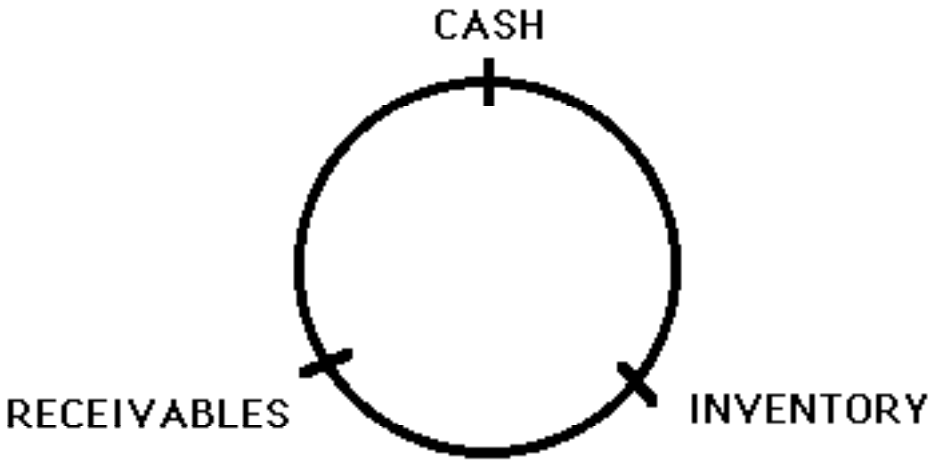
(Cash + Temporary Investments + Net Receivables)/Current Liabilities

(29,208 + 51,786)/82,934 = .98

Analysis

1. Rule of thumb, 1:1 or better is desirable
2. Limitations
   a. receivables may, in certain cases, be relatively non-liquid
   b. inventories may, in certain cases, be relatively liquid
   c. need to know the extent to which bank credit has been used and is still available

Operational Efficiency



Inventory Turnover

Cost of Goods Sold/Average Inventory

Average inventory = (beginning inventory + ending inventory)/2
= (65,511 + 60,664)/2 = 63,087.50

Inventory Turnover = 1,156,452/63,087.5 = 18.3

As a substitute for cost of goods sold, we may use sales (in this case industry data was only available using sales rather than cost of goods sold

Inventory Turnover = 1,349,861/63,087.5 = 21.4

(Industry Average = 28.6)

Number of Days' Supply in Inventory

Days in Year/Inventory Turnover = 365/18.3 = 19.9 days

Analysis:

1. There appears to be too much inventory (based on a comparison to industry average. Possibly due to overstocking of inventory or slow moving inventory.
2. Limitation
   a. ratios may be misleading if firm has
      - ☛ seasonal sales
      - ☛ sporadic sales during the fiscal year
      - ☛ any growth in inventory and sales during the year
   b. financial analysts consider a falling ratio to be a danger signal because
      - ☛ decline in liquidity
      - ☛ high cost of carrying inventory
      - ☛ potential future losses from obsolescence

Receivables Turnover

Net Credit Sales (if available)/Average Accounts Receivable

Average receivables = (beginning receivables + ending receivables)/2
= (51,786 + 52,857)/2 = 52,321.5

Receivables Turnover = 1,349,861/52,321.5 = 25.8

Average Age of Receivables or
Number of Day's Sales in Average Receivables

Days in Year/Receivable Turnover = 365/25.8 = 14.1 days

(Industry Average = 20 days)

Analysis:

1. The company appears to be doing better than the industry in collecting its receivables. This is a positive sign.
2. Rule of Thumb
   a. the collection period should not exceed 1.3 times the regular payment period
3. Limitations
   a. ratios are static, not considering dynamic nature of company's operations
   b. ratios may be misleading if firm has
      - ☛ seasonal sales
      - ☛ sporadic sales during the fiscal year
      - ☛ any growth in inventory and sales during the year
   c. credit sales figure is not always available

Long-Term Solvency

Debt Ratio

Total Liabilities/Total Assets

Debt to Equity

Total Liabilities/Common Stockholders' Equity

(403,848 - 255,846)/255,846 = 57.8

(Industry = 151.9; thus the company is borrowing at a level substantially below that of the industry -- possibly at too low a level)

Profitability

Earnings Per Share (available from the financial statements)

Profit Margin

Net Income/Net Sales = 26,033/1,349,861 = 1.93%

(Industry = 2.28%)

1. Limitations
   a. does not include a consideration of the asset investment needed to generate the profits
   b. comparison may be misleading if other income and losses are significant and non-recurring

Rate of Return on Assets

Profit Margin x Asset Turnover

(Net Income/Net Sales) x (Net Sales/Average Total Assets)

Average Total Assets = (403,848 + 377,734)/2 = 390,791
(26,033/1,349,861) x (1,349,861/390,791) = 6.66%

Return on Common Stockholders' Equity

Profit Margin x Asset Turnover

((Net Income - Preferred Dividends)/Average Common Stockholders' Equity)

Average Common Stockholders' Equity = (255,846 + 241,692)/2 = 248,769
(26,033 - 0)/248,769 = 10.46%

Leverage is trying to use money supplied by nonowners to increase the return to the owners

A comparison of the rate of return on total assets with the rate of return on stockholders' equity indicates the profitability of trading on the equity (leverage)

Dividend Yield

Dividend Per Share/Market Value Per Share

.90/20.63 = 4.36%

1. Limitations
   a. while price appreciation is an important means of earning a return on investments, dividends are usually more certain than market gains
   b. ratio must be judged by
      - ☛ desires of the investor
      - ☛ objectives of the firm's management

Dividend (Payout) Ratio

Dividends Per Share/Earnings Per share = .90/1.79 = 50.3%

1. Limitations
   a. ratio must be judged by
      - ☛ desires of the investor
      - ☛ objectives of the firm's management

Price Earnings Ratio

Market Value Per Share/Earnings Per Share = 20.63/1.79 = 11.5

(Market Average = 8.6)

1. Limitations
   a. considers only earnings and price of the stock; it tells nothing of how earnings and price were achieved
   b. if ratio higher than industry's average, stock may be overpriced or its excellent earnings record leads to its high P/E ratio
   c. if ratio lower than industry's average, stock may be undervalued or its poor earnings leads to a low P/E ratio
   d. typical P/E ratios have varied over the years

Limitation of Ratio Analysis

When comparing the current performance of a company against the current performance of other companies or the industry, limitations similar to those that applied to percentage analysis of financial statements also apply to ratio analysis of such statements. Specifically, some of the limitations of ratio analysis are as follows:

1. comparison between companies is difficult because of different operating characteristics such as the composition and extent of product lines, methods of operation, size, method of financing, and geographical area
2. other companies may use different accounting procedures (e.g. different inventory valuation methods or different depreciation methods), resulting in percentages that are not comparable
3. the industry averages need not indicate a desirable level of performance because the averages could be the result of combining efficient as well as inefficient operating companies
4. financial statements are expressed in monetary terms, yet there are many valuable characteristics, such as the quality of management, that are not readily quantifiable
5. the managements of different companies may have different objectives. For example, some wish to obtain long-term steady growth rate. Others look for economic stability, and still others attempt to earn quick, high profits. The financial statements will not disclose these differing objectives, and it is impossible, therefore, to judge management's success in obtaining its objectives

When comparing the current performance of a company against the past performance of the same company, many of the limitations that applied to percentage analysis of financial statements also apply to ratio analysis of such statements. Specifically, some of the limitations of ratio analysis are as follows:

1. changes in accounting procedures may have significant effects on the ratios that are calculated
2. financial statements, and thus the ratios calculated from such financial statements, are influenced by estimates of future events
3. the effects of inflation are largely ignored in the financial statements
4. firms change over time, especially in the extent and composition of their product line. A comparison of the results for one year versus another year may reveal changes which are indicative of changes in the composition of the firm rather than changes in the financial conditions of the firm
5. the various ratios that are calculated do not indicate <u>why</u> there has been a change over time