Module 5
Fundamental analysis

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1. Overview

The purpose of this module is to explore financial analysis and introduce you to the concepts and tools of cash flow analysis, financial ratio analysis, and common size analysis. I have assumed that you have covered the basics of financial ratio analysis in your principles of finance course. If you have not covered this material – or do not remember much about it – you may want to go back and read about financial analysis.

Want a review of financial statements and financial ratios? Check out the following:

- Financial accounting information
- Financial ratio analysis
- Financial analysis

Financial analysis is the selection, evaluation, and interpretation of financial and other pertinent data. In other words, financial analysis is figuring out what information to use and how to use it. Aside from the company's financial disclosures, the analyst must also perform an analysis of the economy and the industry in which the company operates.

The tools that we use to analyze the company's financial information include:

- Financial ratio analysis;
- Cash flow analysis; and
- Common size analysis.

A. Economic analysis

With respect to the information on the economy, the analyst must evaluate how the company performs in different economic environments. Armed with this information and economic forecasts, the analyst will be able to develop better forecasts of how the particular company will perform in the future.

Economic data that is needed includes:

- Production and income;
- Employment;
- Consumption;
- Investment activity;
- Interest rates;
- Stock prices; and
- Inflation.

The analyst takes this information and compares it with the company over the past few years – preferably over at least one or two economic cycles – and gets an idea of whether the company's fortunes are cyclical. A primary indicator of an economy's health is the growth in real gross domestic product (GDP).

The National Bureau of Economic Research identifies periods of economic contraction (that is, recession) and expansion. You can see the real GDP and percentage changes in annual real GDP in Exhibit 1. In Panel A you see the read GDP plotted over time, which reflects the general trend of growth in the economy. In Panel B you can see the year-to year growth in GDP, whereas in Panel C you can see percentage change in real GDP each quarter over the past fifteen years. In these graphs, you can see the most recent recessionary periods that extended from July 1990 through March 1991 and from March 2001 to November 2001.

Exhibit 1 **Growth in GDP over time**

Panel A **Real GDP, 1929 through 2004 in 2000 chained dollars**

Panel B **Annual percentage change in real GDP, 1929 through 2004**

Panel C **Quarterly percentage change in real GDP, 1990 through mid-2005**

Source of data: Board of Governors of the Federal Reserve System

How does an analyst use this information? One way to use this information is to compare the inflation-adjusted changes in a company's revenues with those of GDP and determine whether the company's revenues tend to follow along with the economy. If a company's revenues change along with the economy, we refer to the company as a **cyclical company**. A company whose revenues change in the opposite direction of the economy is a **counter-cyclical** company. Aside from examining the performance of the company relative to

the economy in general, the analyst must also determine the company's sensitivity to changes in interest rates and other economic indicators.

Though it is important to examine a company in the context of its domestic economy, the analyst must also consider a company's vulnerability to changes in the economies of all of the countries in which it operates.

B. Industry analysis

In addition to an analysis of the economy, the analyst must take a close look at the industry or industries in which the company operates. Aspects of the industry analysis that are important include:

- *Nature of competition*. Who are the company's primary competitors? Is the industry competitive?
- Market share for each company in the industry. Is the company a leader in the industry?
- *Labor conditions*. Is the company able to find a sufficiently skilled workforce? Does the company outsource some or all of its production or service? Is the company's workforce unionized? If so, what is the current contract period and what is the likelihood of a strike?
- *Regulatory conditions*. Is the company regulated? If so, does this affect the company's profitability in a positive or negative manner? Are there barriers to entry into the industry because of regulations?
- *Price elasticity of demand and supply*. What determines the demand for the company's products? How price-competitive is the market for the company's product?
- *Sensitivity of demand to economic conditions*. How does the industry perform relative to the economy? Are all members of the industry affected in the same way by changes in the economy?

These are just some of the factors that an analyst must consider. There are many, additional factors to consider that will vary according to the particular industry.

A classification system that is used by many financial services is the **North American Industry Classification System (NAICS)**, which replaced the **Standard Industrial Classification** (SIC) system in 1997.[1] The NAICS is used to classify businesses according to the goods or services produced. The NAICS is a six-digit coding system that is used by many financial services to classify companies for the purposes of industry data and statistics.

In the analysis of an industry and a company, it is important to understand the sources of value added. In basic economics, you learned that a firm creates value when it has a comparative or competitive advantage. When analyzing an industry and a company, the financial analyst must identify the comparative or competitive advantage that provides economic profit and sustainable growth in the future. You will recall that **economic profit** (a.k.a. **economic value added**) is the income of the company in excess of the firm's cost of capital.[2] A company's **sustainable growth** is the growth rate that it can keep up with without having to resort to additional financial leverage.

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[1] The SIC system had been used since the 1930s.

[2] Economic profit is not the same as accounting profit. The primary difference between the two profits is the cost of capital, or the opportunity cost of capital. The cost of capital is deducted to arrive at economic profit; accounting profit does not consider the cost of capital.

One way to analyze these advantages is to use the five factors that are outlined by Michael Porter:[3]

1. *Threat of new entrants.* The industry/company may have an advantage if there are barriers to new entrants.
2. *Bargaining power of buyers*. The stronger the bargaining power of buyers, the less advantage that a/an industry/company has.
3. *Bargaining power of suppliers*. The greater the bargaining power of suppliers, the lower the economic profit.
4. *Rivalry among competitors*. The more competitive the industry, the lower the economic profits for any member of the industry.
5. *Threat of substitutes*. The greater the ability of competitors to imitate the products or services of a company, the lower the potential economic profit. Patents, trademarks, and copyrights will lower the threat of substitutes.

These are often referred to as **Porter's Five Forces**. As the analyst examines the industry and the company – past, present, and future -- these questions must be addressed:

- What are the sources of the industry's and company's economic profit?
- What are the sources of the company's sustainable growth?

C. Company analysis

The analysis of a company requires looking closely at the company's financial history and recent events, with a goal of assessing the future prospects of the company. The types of information that an analyst must gather include:

- Financial statement data and related disclosures;
- Major news items in recent years;
- Position and market share in industry;
- International investment;
- Where the company is in its life cycle (i.e. high growth/developmental, maturing, declining);
- Contributions of major product, divisions, or subsidiaries to the company's performance;
- Research and development efforts;
- Sensitivity of company to commodity prices (e.g., oil); and
- Major litigation.

One of the key ingredients in a company analysis is the analysis of the financial disclosures.

i) Financial statement disclosures

Financial statements in the U.S. are based on **Generally Accepted Accounting Standards** (**GAAP**). GAAP are a set of principles that are promulgated from a number of sources, including the Financial Accounting Standards Board (FASB), the Accounting Principles Board (APB), and the American Institute of Certified Public Accountants Research Bulletins (among others).

The Securities and Exchange Commission (SEC) requires the reports to be filed by all publicly-traded corporations, including:

- **10-K**, an annual filing in which the company provides the financial statements, footnotes, and other required disclosures.

[3] Michael E. Porter, *Competitive Advantage: Creating and Sustaining Superior Performance* (New York: Free Press: 1985).

- **10-Q**, a quarterly filing in which the company provides the required, yet unaudited quarterly financial statements, which contain much less detail than the annual statements.
- **8-K** report, which is a report of significant company events.

The Sarbanes-Oxley Act of 2002 (SOX) has expanded the required disclosures that companies must make in these filings. You can find all of the filings of publicly-traded companies online at the SEC's EDGAR archives.

The SEC, by law, has the authority to specify accounting principles for corporations under its jurisdiction. The SEC has largely delegated this responsibility to the Financial Accounting Standards Board (FASB). While recognizing FASB Statements of Financial Accounting Standards (SFAS) as authoritative, the SEC also issues accounting rules, often dealing with supplementary disclosures**.** SOX has expanded the ability of the SEC to provide oversight to the auditing of companies by public-accounting firms.

There is an effort to harmonize accounting standards around the world. The International Accounting Standards Committee (IASC), along with the International Organization of Securities Commissions (IOSCO) and the European Economic Community (EEC), promulgate **International Financial Reporting Standards (IFRS)**, which are required for financial disclosures of companies in the European Economic Community. While many recent principles by the FASB and IAS have been similar and some even coordinated to be the same, there remain some differences in accounting principles between IFRS and U.S. GAAP. However, it is expected that the two sets of principles will converge to one set of international accounting principles within a few years.

Publicly-traded companies in the U. S. issue annual reports and quarterly reports to their shareholders and file 10-K, 10-Q, and other reports with the SEC. The following financial statements and disclosures are generally required in these reports:

- The **balance sheet**, which is a report of a company's assets, liabilities, and equity at a point in time.
- The **income statement**, which is a report of a revenues, expenses, and profit over a period of time.
- The **statement of cash flows**, which summarizes cash flows from operating activities, investing activities, and financing activities
- The **statement of stockholders' equity**, which details changes in stockholders' equity
- Footnotes and supplemental schedules, which offer more detailed information about accounting procedures, assumptions, and contingent liabilities.

The auditor's report that accompanies financial statements gives the auditor's opinion on whether the statements present fairly what they purport to present and whether the accounting principles used are generally accepted. The reports to the SEC are generally more detailed than the annual reports sent to shareholder.

What the financial statements don't tell us

The financial statements provide a great deal of information about a company, but there is still more that we may want to know. The scandals in recent years involving Enron, Worldcom, Xerox, and Sunbeam, among others, have brought more attention to what the statements don't tell us. In particular, the focus has shifted to a company's off-balance sheet liabilities. **Off-balance sheet financing** are methods used to finance a company without showing debt on the balance sheet. Fortunately, there has been a significant improvement in accounting principles in recent years that brings many of the formerly off-balance sheet liabilities on to the balance sheet.

These formerly off-balance sheet liabilities include pension and other post-retirement benefit liabilities, capital lease obligations, and asset retirement obligations. Examples of off-balance sheet financing that remain off-balance sheet include sales of receivables with recourse or guarantee, the use of finance subsidiaries, joint ventures to borrow funds and acquire assets, and take-or-pay agreements.[4]

What's an analyst to do? Basically, an analyst must consider these off-balance sheet liabilities and incorporate them in the analysis by estimating the extent of the firm's obligation and include this obligation along with the other liabilities of the firm in analyzing a firm's financial leverage.

What to watch for in a financial disclosure

The recent years have taught us to be more circumspect of financial disclosures. Here are a few things to watch for in analyzing financial statements:

In the financial statements, look for:

- *Auditor's report: qualified?* A lack of a going-concern qualification is the death knell of companies.
- *Write-off or write-down of assets*. What does this imply for future earnings)
- *Write-down of inventory.* If they write-it down, what does it mean about their decision to build it up? What will this do to future earnings when they sell these goods?

In the footnotes, look for:

- *Adoption of a new accounting standard before the company is required to adopt it.* Because new standards are usually a change to a more conservative than current practice, why did they adopt it before they had to?)
- Related-parties transactions footnote. Are there any major transactions involving officers or management of the company?
- *Shifting of receivables to or from subsidiary.* Playing this game can be very misleading.
- Reduction in a line of credit.
- *Change in assumptions for pension accounting.* The assumptions regarding the discount rate, return on plan assets, and future growth in compensation affect the pension expense and liability.
- *Change in depreciation lives or salvage values.* These changes may or may not be disclosed, but they affect reported earnings.
- *Contingent liabilities*. How extensive? Should any of these really be on the balance sheet?

Comparing year-to-year changes and overall trends look for:

- *Change in accounting method,* other than due to a new accounting principle (e.g., change from FIFO to LIFO or vice-versa).
- *Substantial increase in deferred revenue*. Deferred revenue is money collected from customers before delivering goods or services.
- *Increase in the valuation allowance*. The valuation allowance (reported in the tax footnote) is the amount of the deferred tax benefits they do not expect to be able to use in the reasonable future. Why do they not expect to use these?
- *Cash flow from operations that is increasing or decreasing at a rate different from that of net income.* The basic trend of CFO and net income should be the similar.
- *Falling reserves for bad debts and accounts receivable*. A company may boost sales growth by reporting less than appropriate allowance for bad debts.

[4] Take-or-pay agreements are contracts that commit a firm to buy a minimum quantity of a good over a specified period of time, paying even if they do not take delivery of the goods.

ii) Financial ratio analysis

Financial statements and the accompanying footnotes provide a wealth of data to analyze. Because this data can easily become overwhelming, analysts typically examine relationships among these items to provide a more meaningful analysis.

There many ratios available – in fact, there are hundreds of ratios that can be formed based on the income statement, balance sheet, and statement of cash flow items. The formulas for the most common financial ratios are provided here.

There are many uses of ratios. These include:

- Stock valuation models (e.g., estimating return on investment and growth),
- Estimating systematic risk,
- Assessing credit-worthiness (e.g., bond ratings), and
- Predicting bankruptcy.

Importance of financial ratios

A single value of a financial ratio is not meaningful by itself, but must be examined in context of the firm's history (past performance), the industry, the major competitors, and the economy. A **time-series analysis** of ratios involves examining the pattern of ratios over time, say 5 or 10 years. We can spot trends and also get a sense of the variability of the ratio over time. A **cross-sectional analysis** of ratios involves examining the differences in ratios across firms at a point in time. We generally compare a company's financial ratios with those of the industry leaders, the major competitors, or the average of the industry.

Commonly used ratios

There are too many ratios to present here, but here is a sampling of the ratios and how they are used. As you will recall from your study of the principles of finance, there are many financial ratios that the analyst can use to evaluate a company. We can classify these ratios into several categories:

1. **Liquidity ratios** provide information on a firm's ability to meet its short-term obligations.
2. **Profitability ratios** provide information on the amount of income from each dollar of sales. We look at these ratios to see how well the company is managing its expenses.
3. **Activity ratios** relate information on a firm's ability to manage its resources (that is, its assets) efficiently.
4. **Return on investment ratios** provide information on the amount of profit, relative to the assets employed to produce that profit.
5. **Financial leverage ratios** provide information on the degree of a firm's fixed financing obligations and its ability to satisfy these financing obligations.
6. **Shareholder ratios** describe the firm's financial condition in terms of amounts per share of stock.

Liquidity ratios

A company's need for liquidity depends, in large part, upon the company's line(s) of business and customs of credit. For example, a retail establishment must have a certain amount of cash on hand at each retail location for day-to-day transactions, whereas a service business does not have such requirements. In some industries it is customary to extend credit to customers, whereas in other industries it is not.

We use information about a company's operating cycle in our investigation of a company's need for liquidity. The **operating cycle** is the length of time it takes to turn the investment of cash in inventory back into cash. Basically, the longer a company's operating cycle, the greater the need for liquidity.

The operating cycle

The operating cycle is measured in length of time and is the sum of:

1. The number of days of inventory
2. The number of days of receivables

The **number of days of inventory** is the number of days a company could go without adding inventory until they deplete inventory. The **number of days of receivables** is the number of days it takes to collect on credit accounts. Therefore, the net operating cycle is the number of days it takes to turn the investment in inventory into cash, considering that purchases are acquired with credit.

Exhibit 2 The operating cycle of General Electric 2002

Number of days ...	
Inventory	41.4 days
Receivables	148.9 days
Payables	93.7 days
Net operating cycle	96.6 days

We can also calculate the **net operating cycle**, which is the operating cycle, less the number of days of payables. The number of days of payables is the length of time the company takes in paying off its suppliers.

	Number of days of inventory
+	Number of days of receivable
–	Number of days of payables
	Net operating cycle

Liquidity ratios

The longer the company's operating cycle, the more liquidity that a company typically needs. We use liquidity ratios, along with the company's operating cycle information, to assess the company's ability to meets its short-term obligations.

- The **current ratio** is the ratio of current assets to current liabilities; indicates a firm's ability to satisfy its current liabilities with its current assets.
- The **quick ratio** is the ratio of quick assets (generally current assets less inventory) to current liabilities; indicates a firm's ability to satisfy current liabilities with its most liquid assets.

Current ratios: Consumer products, 2004

Clorox	0.8
Colgate-Palmolive	1.0
Kimberly-Clark	1.1
Procter & Gamble	0.8

Source: S&P NetAdvantage

Profitability ratios

We use profitability ratios to assess a company's performance over a given period of time. We use these ratios to assess the ability of a company to manage its expenses.

- **Gross profit margin is** the ratio of gross profit to sales. Indicates how much of every dollar of sales is left after costs of goods sold.
- **Operating profit margin** is the ratio of operating profit (EBIT) to sales. Indicates how much of each dollar of sales is left over after operating expenses.
- **Net profit margin** is the ratio of net income to sales. Indicates how much of each dollar of sales is left over after all expenses are paid.

Net profit margins:
Consumer products, 2004

Clorox	12.6%
Colgate-Palmolive	12.5%
Kimberly-Clark	11.7%
Procter & Gamble	12.6%

Source: S&P NetAdvantage

Activity ratios

The analyst uses activity ratios to asses the company's use of its assets.

- **Inventory turnover** is the ratio of cost of goods sold to inventory. Indicates how many times inventory is created and sold during the period.
- **Accounts receivable turnover** is the ratio of net credit sales to accounts receivable. Indicates how many times in the period credit sales have been created and collected.
- **Total asset turnover** is the ratio of sales to total assets; indicates the extent that the investment in total assets results in sales.
- **Fixed asset turnover** is the ratio of sales to fixed assets; indicates the ability of the firm's management to put the fixed assets to work to generate sales.

Financial leverage ratios

We are often concerned about a company's ability to meet its financial obligations and the risk associated with its financing obligations. We can use financial leverage ratios, in combination

- The **debt to assets ratio** indicates the proportion of assets that are financed with debt (both short-term and long-term debt).
- The **debt to equity ratio** indicates the relative uses of debt and equity as sources of capital to finance the firm's assets, evaluated using book values of the capital sources.
- The **equity multiplier** is the ratio of total assets to shareholders' equity, which also provides information on the relative use of debt and equity; the greater this ratio, the more reliant the company is on debt financing.
- The **interest coverage ratio** indicates the firm's ability to satisfy interest obligations on its debt. Also known as the times-interest-earned ratio.

As an example of a financial analysis, take a look at the brief analysis of Delta Air Lines.

Note: this file contains audio

Return on investment ratios

Return on investment ratios provide the analyst with information regarding the net benefit of employing a specific investment. There are three commonly used return ratios:

- **Operating return on investment ratio** is a measure of the operating income resulting from the firm's investment in total assets. This ratio is also known as the basic earning power ratio.
- **Return on assets** indicates the firm's net profit generated per dollar invested in total assets.
- **Return on equity** is the profit generated per dollar of shareholders' investment (i.e., shareholders' equity).

Return on assets:
Consumer products, 2004

Clorox	14.6%
Colgate-Palmolive	16.1%
Kimberly-Clark	10.5%
Procter & Gamble	12.6%

Source: S&P NetAdvantage

We can breakdown any return ratio into components,

enabling the analyst to attribute changes in returns to the management's utilization of assets, the ability to manage expenses, and even tax effects.

Analyzing return ratios in terms of profit margin, turnover ratios, and other components, referred to as the **DuPont System**, is credited to the E. I. du Pont Corporation, whose management developed a system of breaking down return ratios into their components.

Exhibit 3 Applying the DuPont System to the Return on Equity

$$\frac{\text{Net income}}{\text{Shareholders' equity}}$$

$$\frac{\text{Sales}}{\text{Total assets}} \times \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Total assets}}{\text{Shareholders' equity}}$$

$$\frac{\text{Sales}}{\text{Total assets}} \times \left(\frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{EBT}}{\text{EBIT}} \times (1 - \text{tax rate})\right) \times \frac{\text{Total assets}}{\text{Shareholders' equity}}$$

EBIT = Earnings before interest and taxes
EBT = Earnings before taxes

Return on equity can be broken down into the return on assets and the equity multiplier, as you can see in Exhibit 3.

We can use the Du Pont system to help detect trends in assets utilization and efficiency that may explain trends in a return over time. For example, Consider Kmart's return on assets 1990 through 2000, as shown in Panel A of Exhibit 2.[5] We see that the return on assets deteriorated after 1992 and Kmart recovered somewhat in 1998, falling once again prior to the bankruptcy filing in 2001.

So what was Kmart's problem? The asset turnover did not change much over this period; in fact, there is a slight improvement in the turnover over time. What appears to be driving the return on assets is the profit margin, which reflects the company's ability to manage its expenses. In the case of Kmart, the focus in diagnosing any problems – and suggesting any remedies, lies in the management of its expenses. Comparing Kmart's experience with that of Wal-Mart, shown in Panel B of Exhibit 2, we see that Wal-mart's return on assets is driven by its total asset turnover.

Exhibit 4 **Return, total asset turnover, and net profit margin**

Panel A **Kmart, 1990-2000**

Panel B **Wal-Mart, 1990-2004**

Shareholder ratios

We can restate financial data into measures that are on a per share basis, including:

- **Earnings per share** (**EPS**) is the amount of income earned during a period per share of common stock.
- **Book value equity per share** is the amount of the book value of common equity per share of stock.
- **Dividends per share (DPS)** is the dollar amount of cash dividends paid during a period, per share of common stock.

In addition, we often look at other ratios that provide useful information. For example, the **dividend payout ratio**, which is the ratio of cash dividends paid to earnings for a period, tells

[5] Kmart filed for bankruptcy in January of 2001. In 2004, Sears Roebuck & Co. merged with Kmart.

us how much of a company's earnings are paid out to owners. Its complement, the plowback ratio (that is, the ratio of retained earnings to earnings) tells us how much the company is reinvesting in itself.

The **price-earnings ratio** (**P/E** or **PE ratio**) is the ratio of the price per share of stock to the earnings per share of stock. It is often used as a barometer of what investors believe is the future growth of the company; the larger the ratio, the greater the anticipated growth. However, we have seen price-earnings that are unreasonable – that is, much higher than the typical 12-15 times we usually see for stocks – which may indicate unreasonable pricing by investors. We saw a great deal of this mis-pricing during the Internet run-up in prices leading up to the burst of the Internet stock "bubble".

Price-earnings ratios: Annual range
Consumer products, 2004

Clorox	18-23
Colgate-Palmolive	18-24
Kimberly-Clark	16-19
Procter & Gamble	20-23

Source: S&P NetAdvantage

Use of financial ratios

Once you have identified the financial data necessary for the ratios, the actual calculation of these ratios is quite straightforward. The more important task of the financial analyst is to make sense of all this information. We typically look at financial ratios along three dimensions:

1. Other financial dimensions of the company
2. Trends over time for the company itself
3. Comparisons with companies in the same industry.

Other financial characteristics

One of the important lessons of financial ratio analysis is that there is no value of a particular ratio that is good or bad. It all depends on how that ratio fits into the whole scheme of the company's financial condition and performance. For example, a company that has 70% of its assets financed with debt may be worrisome to its owners if it has a high degree of business risk, but not so worrisome if it has a lower degree of business risk. As another example, consider a company that has a high inventory turnover. A high turnover may be good, indicating that the company is managing its inventory very efficiently. On the other hand, a high turnover may be bad, indicating the company has a high risk of stock-outs. How do we resolve whether this is good or bad? We look at other dimensions of the company, such as its profitability, to see whether the turnover is a problem.

The Du Pont system is a useful tool to employ to look at the interaction of the different characteristics of a company. We can use this system to break down return ratios into the components – the drivers – that may explain the returns.

Trends over time

With respect to trends over time for the company, we generally look at the company's ratios over a period of time of at least five years, but preferably enough years to see how the company performs over different points in an economic cycle (i.e., peaks and troughs). Along with these trends, however, the analyst must consider the major company events that may explain changes over time. For example, if the company has a major acquisition or divestiture over the range of years examined this will affect any trends.

Also, consider whether there were significant changes in accounting principles that may affect the observed trend. For example, since 2001 goodwill is not amortized, but instead is reviewed annually to see whether its value is impaired. If you are looking at a company's ratios over a

range of years that includes years before and after 2001, you will have a slight bias (upward) in the earnings of the company due to the elimination of goodwill amortization – companies are no longer hurting earnings from amortization. For companies that choose to write-off a portion of these goodwill (e.g., AOL Time Warner wrote off $54 billion of goodwill in 2002), the financial picture is distorted because of:

1. the "big bath" taken when the goodwill is written off, and
2. returns on assets are enhanced from a lower asset base following the write off.

Therefore, it is important to consider the impact of accounting changes in the comparability of financial results over time.

Comparables

In assessing the financial health of a company, we often compare the financial ratios of a company with those of its major competitors or the industry as a whole. The challenge is often identifying the competitors or the industry. With respect to competitors, we want to compare the company with those competitors that have similar lines of business in similar proportions. Consider Procter & Gamble. Its major competitors are Johnson and Johnson and Kimberly Clark, with Johnson and Johnson being the closest in size to Procter & Gamble. When we look at these three companies, however, we can see that the companies' business segments are different. Consider the comparison of Procter & Gamble (PG) with Johnson and Johnson (JNJ). Though both companies are in the consumer products industry, their participation in the industry differs, as we can see from the business segment data from their respective 10-K filings for 2004:

Procter & Gamble	**Revenues in billions**	**Assets in billions**
P&G Beauty	$19.483	$11.340
Health Care	7.786	3.256
Baby Care and Family Care	11.890	7.426
Fabric Care and Home Care	15.262	6.706
Snacks and Coffee	3.140	1.749

Johnson and Johnson	**Revenues in billions**	**Assets in billions**
Consumer	$8.333	$5.056
Pharmaceutical	22.128	11.112
Medical Devices and Diagnostics	16.887	15.052

Though it is ideal to compare the company that is the focus of the analysis with companies in the same industry, it is quite difficult to find competitors that are truly comparable. If we use industry averages instead of selecting particular companies, this does give us a broader picture of the condition and performance of the industry, but we are including results for companies that are leaders and laggards in the industry.

Limitations of financial ratios

Financial ratios are easy to calculate, but there are some limitations of using financial ratios to assess a company's financial health:

1. The use of accounting information that permits some choice of accounting principles. Therefore, comparisons over time or across companies may not be appropriate because of differing accounting principles.
2. Companies restate their financial results due to errors or misapplications of accounting principles, making comparability over time difficult.

3. It is often difficult to determine the appropriate industry to use in comparing firms. Many firms operate in several different lines of business, making it challenging to identify the industry.
4. The necessity to consider more than one type of ratio. There are interactions among the different ratios that require considering different ratios simultaneously (e.g., liquidity and profitability).
5. Determining the approach target or comparison value for a ratio is difficult, requiring some range of acceptable values.

Financial ratios are not the only information that an analyst uses to analyze a company. The financial ratio analysis must be put in context of the larger picture of the company that includes the industry in which it operates and the economy.

iii) Cash flow analysis

A financial analyst analyzes a company's cash flows using a number of tools:

1. Patterns in the three cash flows from the statement of cash flows: CFO, CFI, CFF
2. Financial ratios that compare cash flows with investments.
3. Analysis of the trends in free cash flow

Statement of cash flow information

The **statement of cash flows** provides information on the cash flows of a company from operations, for or from investments, and for or from financing. Analysts use these cash flows to evaluate a company's financial health and to predict the future cash flows.

Looking at trends in cash flows, in conjunction with balance sheet and income statement information, an analyst can learn about a company's future cash-generating abilities. For companies experiencing financial difficulty, the cash flow information is more useful than the other financial statements in assessing the firm's current and future financial condition.

The statement of cash flows is useful in financial analysis because:

- The entries in the statement are less affected by the choice of accounting principles than the income statement, which makes it attractive to use in assessing a company's performance.
- The statement highlights liquidity problems and a company's ability to internally generate funds.
- Trends in the different components of the statement of cash flows can aid the analyst in assessing current and future condition of the company.
- Comparisons between net income and the cash flow from operations can reveal management or manipulation of earnings; the two series should follow the same trend and significant deviations should be a warning flag to take a closer look at the method the company used to determine net income.

Classification Issues

Relying on cash flows from the statement of cash flows presents a dilemma for the analyst because the ideal manner of classifying cash flows may not coincide with GAAP used to prepare the statement.

Consider the effect of the classification of leases. Companies that lease will have lower cash flow from operations relative to a non-leasing firm because the lease expense reduces the cash flow from operations (whereas the depreciation expense on purchased assets does not). While an

operating lease and a capital lease may be very similar in nature (that is, both provide the use of an asset in exchange for periodic payments), the classification of a lease as operating versus capital for accounting purposes affects the classification of cash flows.

Further muddying the cash flows is the method used in U.S. GAAP to classify interest and dividends income and expense.[6] Because interest and dividend received are included in operating cash flows, a return on capital using cash flow from operations will differ from the true return on capital. Additionally, interest expense is deducted to arrive at net income and hence cash flow from operations, even though it is a financing flow. This makes it difficult to compare firms with different capital structures.

So what is an analyst to do? An analyst must look at each company and the methods of accounting that each chooses and then restate the company's statement of cash flows to suit his judgment regarding the appropriate classification of cash flows.

We can trace the patterns of cash flows over time to get an idea of the company's future, sustainable performance. A healthy company is able to generate cash flows from its operations. Though there may be an occasional year in which the company does not generate cash flows from operations, it is important for any company to generate cash flows from operations in most fiscal years. Cash flows from operations will vary along with the company's earnings, though there may be less variability when compared to that of net earnings. The primary difference between net income and cash flows from operations is that attributed to depreciation, depletion, and amortization. Another difference may be

Another sign of a healthy company is a continual investment in its plant and equipment. As companies replace equipment to continue operations, they spend ever increasing amounts for the replacement equipment. Companies that are at least maintaining their current growth will, on net, have negative cash flows for investment purposes. On the other hand, companies that are divesting themselves of portions of their business may have, on net, positive cash flows from investments.

[6] The International Financial Reporting Standards (IFRS), on the other hand, provide the flexibility for companies to classify interest income and expense, as well as dividend income, in the appropriate investing or financing classification.

Companies that are growing quickly – more quickly than the cash flow from operations permit, will borrow and/or issue stock and, therefore, have positive cash flows from financing. Companies that are maturing and are able to support its operations on its cash flows from operations may pay off the financing, and hence have negative cash flows from financing.

We can see the differing patterns of income and cash flows from operations in Exhibit 5 for Eastman Kodak over the period 1990 through 2004. Cash flows from operating activities are less variable than net earnings, as you can see in this example.

Focusing on the cash flows from the different sources, we see that Kodak generates cash flows from operations each year, but that the level of these cash flows has declined in general. Kodak continues to invest, which is consistent with a healthy company. However, the level of investment has declined for the most recent year, 2004. Kodak was paying off its debts over time, but just recently, in 2003, had to borrow because of insufficient cash flow from operating activities.

Exhibit 5 Cash flows for Eastman Kodak Company

Panel A Net earnings and cash flows from operating activities

Panel B Cash flows from operating, financing, and investing activities

Source of data: Mergent Online

Financial ratios with cash flows

Many analysts focus on a company's cash flows instead of earnings. This is primarily because it is generally believed that cash flows give a better indication of a company's performance and are not as easily managed or manipulated as earnings. A case that illustrates this is that of retailer W. T. Grant, which filed for bankruptcy in 1975. W. T. Grant's financial problems were not evident in its current ratio or profitability ratios, but were evident in its cash flows.

An informative ratio is the ratio of cash flow from operations (CFO) to current liabilities, which provides information regarding the company's ability to satisfy its immediate, short-term commitments:

$$\text{CFO to current liabilities} = \frac{\text{Cash flow from operations}}{\text{current liabilities}}$$

Another commonly used cash flow ratio is the ratio of the stock's price to cash flow per share. This ratio is similar to the price-earnings ratio that is often used to assess investor' belief regarding the future growth of the company. The price-to-cash flow ratios indicates the multiple that investors give the stock, which is indicative of sentiment regarding the future growth of the company's stock price.

We can also use operating cash flow in the place of net income to evaluate a company's financial performance. For example, we can construct a type of profitability ratio by comparing cash flow to sales. Or, we can compare sales to cash flow, forming the sales-to-cash flow ratios

$$\text{Sales to cash flow} = \frac{\text{Sales per share}}{\text{Cash flow per share}}$$

Free cash flow

Free cash flow (**FCF**) is the cash generated during a period in excess of the capital expenditures needed to maintain the firm's present productive capacity. The larger a company's free cash flow, the better able the firm is to meet financial obligations and to grow in the future.

There several formulas used in determining FCF, with the differences due to the purpose of the calculation: is the analyst calculating the cash flow available to shareholders? to all suppliers of capital (bondholders and shareholders? The former is referred to as the **free cash flow to equity** and the latter is referred to as the **free cash flow to the firm**.

In its purest form, and to be consistent with theory, the capital expenditures are only those needed to maintain the company's current growth. However, as a practical matter, it is not possible to look at a company's financial statements and determine how much of the reported capital expenditures are needed for the current growth and how much are not. Therefore, most analysts simply use the total capital expenditures amount (taken from the statement of cash flows) in their calculation:

$$\text{Free cash flow} = \text{Cash flow from operations} - \text{capital expenditures}$$

The amount of the capital expenditures for the year is provided in the statement of cash flows.

A financial healthy company will have positive free cash flow, which gives it the financial flexibility to explore additional investment opportunities as they become available. Consider Peregrine Systems, a software company that went bankrupt in 2003 and was then bought by Hewlett Packard in 2005. The company had declining free cash flows, as shown in Exhibit 6, with negative flows in the 2001, 2002, and 2003 fiscal years.

There are variations in the definition of free cash flow in application: whether this is cash flow available to the firm (use cash flow from operations before interest expense) or to shareholders (use cash flow from operations). There are also variations due to the amount of capital expenditure and other necessary uses of cash flow; for example, some analysts remove dividends from the cash flow, arguing that the dividends are outflows that are not reinvested in the company.

Exhibit 6 **Free cash flows for Peregrine Systems**

Source: Mergent Online

Some companies now report free cash flow in their financial statements, along with the required financial disclosures. However, most often they don't tell us how they computed it.

iv) Common size analysis

Common size analysis is the analysis of financial statement items through comparisons among financial statement or market data. Common size analysis compares each item in a financial statement with a benchmark item. Common size analysis is useful in analyzing trends in profitability and trends in investments and financing activity.

We construct a common size statement by restating each account in a statement as a percentage of some benchmark:

- For the income statement, the benchmark is sales; each item in the income statement is restated as a percentage of sales.
- For the balance sheet, the benchmark is total assets; each item in the balance sheet is restated as a percentage of total assets.

Common size analysis is useful because it allows us to spot trends that would not be obvious using other means. Consider the picture of Harley-Davidson, the manufacturer of motorcycles, as we look at its asset composition over time in Exhibit 7. In Panel A, you can see the growth in the company's plant, property, and equipment, inventory, and accounts receivable. In Panel B, in which each account is restated as a percentage of total assets, you can see how Harley Davidson is changing its business, relying less on the manufacturer of motorcycles and relying more on the financing of the motorcycles.

Exhibit 7 Harley Davidson, 1990 – 2004

Panel A Growth in accounts over time

Panel B Common size balance sheet

Source of data: Mergent Online

D. Recap

In this module, we've covered the basic tools used to analyze a company's financial condition and performance. A useful approach in the analysis of a company is to begin with the economy and then analyze the company's industry. Once you have an idea of how the company fits into the economy and the industry, you can then analyze the company's financial condition and performance using the tools of financial ratio analysis, cash flow analysis, and common size analysis.

2. Module Tasks

A. Required readings

- Chapter 13, "Economy/Market Analysis," *Investments: Analysis and Management*, by Charles P. Jones, 9th edition.

- Chapter 14, "Sector/Industry Analysis," *Investments: Analysis and Management*, by Charles P. Jones, 9th edition.
- Chapter 15, "Company Analysis," *Investments: Analysis and Management*, by Charles P. Jones, 9th edition.
- Sustainable growth, a reading by Pamela Peterson Drake
- A financial analysis of Delta Airlines, a PowerPoint presentation

B. Optional readings

- Financial ratio analysis, by biz ed. A thorough review of financial ratios.
- Take Your Fiscal Temperature with Financial Ratios, by American Express

C. Practice problems sets

- Jones, Chapter 13 questions and problems
- Jones, Chapter 14 questions and problems
- Jones, Chapter 15 questions and problems
- Module 5 StudyMate Activity

D. Progress on the project

- By the completion of this module, you should gathered the financial data on your company – preferably at least the past ten fiscal years of data – and calculated financial ratios for the different aspects of the company's financial condition and performance.
- The best source of the actual data for the ratios is Mergent Online, which is available through the Florida Atlantic University library. This is a database that permits downloading data into worksheets that can be transformed into Microsoft Excel® worksheets for analysis.
- You should begin charting the financial ratios over time and identifying trends, changes in trends, and major corporate events that affect the company's financial condition and performance.
- Using Porter's Five Forces, identify the sources of competitive advantage for your company.

E. Module quiz

- Available at the course Blackboard site. See the Course Schedule for the dates of the quiz availability.

3. What's next?

In this module, you have learned about some of the tools that analysts use to evaluate the financial condition and performance of a company. While you have seen financial ratio analysis in your principles of finance and accounting courses, we are taking these tools a step further in this module to get you to see the bigger picture of how this applies to an actual company, how you need to look at many aspects of a company's condition and performance, and how you can incorporate common size and cash flow analysis into your evaluation.

When you complete this module, you have completed one half of the course. So far we have looked at securities, securities markets, and securities trading. We have also see how to analyze a company in the context of its industry and the economy. Following the mid-term exam, we will be focusing on portfolio theory, asset pricing theory, valuation of securities, and derivatives.