

R26 Applications of Financial Statement Analysis

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1. Introduction & Evaluating Past Financial Performance

This reading brings us to the end of financial reporting and analysis. Think of this reading as a practical application of steps outlined for a financial analysis framework (define purpose, collect and process data, analyze and interpret, recommend and follow-up). Some of the questions we will address over the next few sections are:

- What factors to consider when evaluating a company's past financial performance?
- How to approach forecasting a company's future net income and cash flow?
- How can a financial statement analysis be used to evaluate the credit quality of a fixed income statement?
- How can it be used to identify potential equity investments?
- What adjustments do analysts need to make so that the financial ratio comparison between companies is meaningful?

1.1 Application: Evaluating Past Financial Performance

Evaluating past performance helps analysts assess *how* the company performed and the reasons behind its performance (*why* it performed the way it did). When studying a company, some key analytical questions include the following:

- How and why have corporate measures of profitability, efficiency, liquidity, and solvency changed over the period being analyzed?
- How do the level and trend in a company's profitability, efficiency, liquidity, and solvency compare with the corresponding results of other companies in the same industry? What factors explain any differences?
- What aspects of performance are critical for a company to successfully compete in its industry? How did the company perform relative to those critical performance aspects?
- What is the company's business strategy? Do the financials reflect the strategy?

To evaluate how a company performed, an analyst can process data by creating common-size financial statements, calculating ratios, and analyzing industry-specific metrics. Some of the factors an analyst must be aware of when evaluating financial performance are discussed below:

Change in Company's Strategy

The effect of a company's strategy is reflected in its performance. Let us take the example of Apple Inc.

- Apple was primarily a personal computer technology company until early 2000's.
- The company's strategy changed substantially between 2007 and 2010 and as a result its product mix with the introduction of iPod, iPad and iPhone.

- The company wanted to become a pioneer in the *personal interactive electronics space* by leveraging its unique ability to design and develop.
- The change in strategy is evident in its financial performance. In 2005, iPod became Apple's bestselling product. By 2009, iPhone became Apple's most sold product. The share of computers in sales continued to decline.
- When a company sells differentiated products, it can charge higher prices. Premium prices lead to higher gross margins. Impact on operating profit margins, however, is weaker relative to gross margins because a company has to spend on advertising and research to support differentiated products.

Differences in Accounting Standards

When comparing the ratios of different companies, analysts must be aware of the accounting standards, methods, and estimates used for reporting as they can have a significant impact on the financial statements. Let us consider the example below where the ROE of three companies reporting under different accounting standards are given. For comparison, they are then converted to US GAAP.

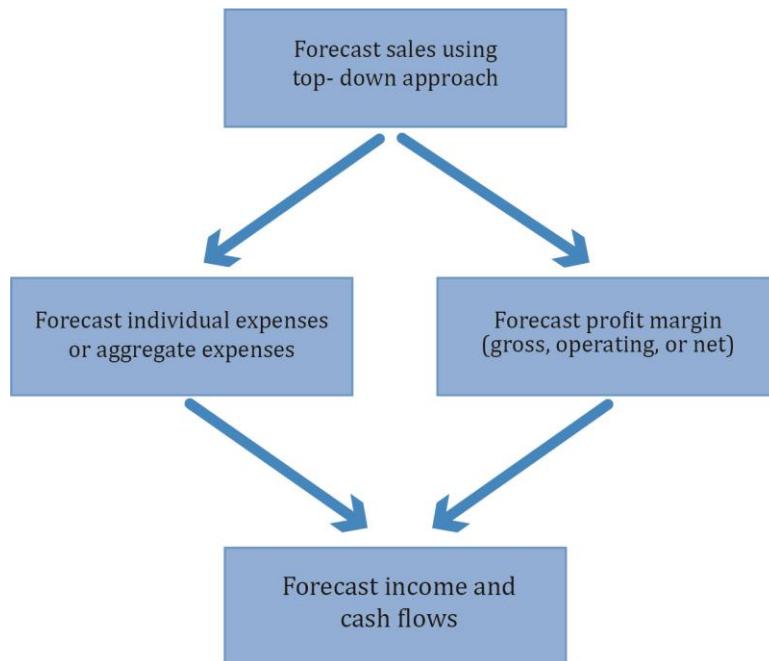
ROE of three companies for a year (in %)			
	Mexican GAAP	Brazilian GAAP	US GAAP
Mexican company	52.69		211.12
Brazilian company		-7.89	29.34
U.S. company			12.69

While the Mexican company reported the highest ROE under Mexican and US GAAP, the Brazilian company turned profitable under US GAAP after posting a negative ROE. The table illustrates why it is important to make adjustments to a common standard such as US GAAP before comparing the financial ratios of companies.

This comparison only provides information about *how* a company performed. To understand *why* it performed better or worse, analysts gather information from the management commentary, MD&A, and industry sources such as consumer surveys. The results of a past performance analysis set the ground for making recommendations.

2. Application: Projecting Future Financial Performance as an Input to Market Based Valuation

To estimate the target price for a company's stock, an analyst needs to forecast EPS. The inputs for estimating EPS are future sales and profit. The steps usually followed for projecting performance are illustrated below:



Notice that future income can be projected in two ways: by estimating expenses and by forecasting future profit margins. The individual steps used to forecast sales and profit margin are listed below:

Forecast Sales

Analysts often take a top-down approach to forecasting sales.

- Forecast expected GDP growth rate.
- Forecast expected industry sales based on historical relationship with GDP. For example, based on historical data, an analyst may conclude that a 3% increase in GDP corresponds to a 3% increase in industry sales.
- Forecast expected change in company's market share, i.e., whether a company is expected to gain, lose, or retain its market share over the forecasting period. Market share projections may be based on historical data or forward-looking analysis.
- Forecast expected company sales by multiplying projected market share by projected total industry sales.

Forecast Expenses

- Use historical margin for stable firms like Johnson & Johnson.
- For less stable firms like Facebook, estimate each expense item.
- Remove non-recurring items.
- Estimate interest expense based on the level of debt; estimate tax expense based on the tax rate and the earnings before taxes.

- Those special charges that are reported every year are not transitory and thus should be included in evaluating past and future margins.

Forecast Cash Flows

- Estimate changes in working capital.
- Estimate investment expenditures.
- Estimate dividend payments.

Instructor's Note: Section 3 'Projecting Multiple-Period Performance' is not testable and hence not covered.

4. Application: Assessing Credit Risk

Another application of financial statement analysis is in assessing the **credit risk** of a borrower. Credit risk is the risk that the borrower will fail to make the obligated interest and principal payments. Credit analysis is the evaluation of credit risk. The purpose of credit analysis is to determine whether a company will be able to service its debt (interest and principal payments) on time. A credit analysis exercise is likely to include an evaluation of the following:

- Profitability (net profit margin, operating margin, etc.)
- Cash flows and the variability of cash flows. If the cash flow is highly volatile, then it becomes a concern.
- Business risk (low revenues and high expenses).
- Financial risk (high debt and low operating profit).

Let us take a look at how Moody's assigns credit ratings for a company based on the following groups of qualitative factors:

- Scale: Refers to a company's sensitivity to adverse events that affect debt-paying ability. Larger size and scale indicate prior success, and the company's ability to adapt to changing economic conditions.
- Business profile: Refers to 'a company's competitive position, stability of revenues, product and geographic diversity, growth prospects, and the stability and volatility of cash flows.'
- Leverage and coverage: Refers to a 'company's "financial flexibility" and viability'.
- Financial policy: Refers to a 'company's financial risk tolerance and its capital structure'.

5. Screening for Potential Equity Investments

Screening is a process to filter investments (for example stocks, bonds) based on a set of criteria. The criteria may be a set of financial ratios, or other metrics such as dividends paid, market capitalization, etc. One example of a stock screen is defined below.

Criterion	Stocks Meeting Criterion
P/E < 15	100
Assets/Equity < 2	50
Dividends > 0	75
Meeting all three criteria collectively	25

The criteria are not limited to the factors mentioned above. It can be as detailed and as specific as required based on the investment requirement. For example, if an analyst wants to keep risk low, he might screen for companies with positive earnings and a low leverage ratio (assets/equity). If he wants low P/E firms which are financially strong, he might use criteria such as P/E less than 10, and debt/equity less than 0.2.

Types of Investors

Stock screens are used by both growth and value investors.

- **Growth Investors:** Focused on investing in high earnings growth companies. Screens use criteria related to growth or momentum.
- **Value Investors:** Investors focused on paying a relatively low share price in relation to earnings per share or book value per share (low P/E or low P/B). Screens use valuation ratios as criteria.
- **Market-oriented Investors:** Intermediate category of investors who cannot be classified as growth or value investors.

Back-testing

Often, an analyst may be interested in finding how a portfolio based on a stock screen would have performed historically. For instance, assume you go back 5 years and apply the same stock screen to form a portfolio of stocks to see how much the portfolio would have earned had the strategy been implemented. However, there are some limitations (biases) to this approach:

- **Survivorship bias:** Companies that are no longer in operation (or delisted) will be eliminated. The surviving companies appear to have performed better.
- **Look-ahead bias:** If companies have restated their financial statements, then there is a mismatch between what the investor would have known at the time of the investment decision and the information used now in back-testing.
- **Data-snooping bias:** The bias that may exist if excessive analysis is applied to the same data set.

6 – 8. Analyst Adjustments to Reported Financials

When comparing ratios of companies using different accounting standards, adjustments may be required. Before making adjustments, consider the following:

- *Importance:* Will any adjustments to an item *materially* affect the conclusion? For example, inventory for a bank has minimal impact. So, will it matter if one bank uses LIFO and the other FIFO?
- *Body of standards:* Is there a difference in accounting standards: IFRS, US GAAP or home-country GAAP? What does it impact the most?
- *Methods:* Is there a difference in accounting methods used? For example, cash/accrual based accounting, straight-line or accelerated depreciation, and LIFO/FIFO to measure inventories.
- *Estimates:* Is there a difference in estimates used by companies? For example, residual value or useful lives of similar assets by two companies.

Analyst Adjustments Related to Investments

Assume Company A classifies financial assets as “available for sale” and Company B classifies similar assets as “trading” securities. Adjustments must be made to classification of investments to facilitate comparison. Recall the following rules for classifying financial assets from the reading on balance sheets:

Classification of Financial Assets	
Classification	Treatment
Measured at fair value through profit or loss: trading securities in US GAAP.	Unrealized gains or losses reported in income statement.
Measured at fair value through other comprehensive income: available for sale (AFS) securities in US GAAP.	Unrealized gains or losses recognized in equity.

Analyst Adjustments for Inventory

Consider two companies reporting under US GAAP: one uses LIFO while the other uses FIFO. Companies using LIFO are also required to report a LIFO reserve. When LIFO reserve is added to LIFO inventory, we get inventory value under FIFO.

To make the results of the two companies comparable, the inventory values of the company following LIFO must be adjusted to FIFO using the following formula:

$$\text{FIFO Inventory} = \text{LIFO inventory} + \text{LIFO Reserve}$$

Analyst Adjustments Related to Property, Plant, and Equipment

Any company's management exercises considerable discretion when it comes to estimates and accounting methods for depreciation. Depreciation expense can significantly impact the net income of company and fixed assets on the balance sheet. So, it depends whether a company is making aggressive or conservative estimates for the useful life and residual value of its assets.

Specific adjustments are usually not made for depreciation when comparing two companies. It is more of a qualitative factor. The table below is self-explanatory; it lists the relationships between assets and depreciation as seen in the balance sheet and income statement.

Estimate	Calculation
Number of years of useful life which have passed.	Accumulated depreciation/ gross PPE
Number of years of depreciation expense which have been recognized.	Accumulated depreciation/depreciation expense
How many years of useful life remain for the company's overall asset base?	Net PPE (net of accumulated depreciation)/depreciation expense
Average life of the assets at installation.	Gross PPE/depreciation expense
What percentage of the asset base is being renewed through new capital investment?	Capital expenditure/ sum of gross PPE & capital expenditure

Analyst Adjustments Related to Goodwill

Goodwill arises when one business acquires another business. If the purchase price exceeds the sum of the fair value of the individual assets and liabilities of the acquired business, then the excess amount is recognized as goodwill. Let us assume that companies A and B are identical except that A has grown through acquisition and B has grown organically. What is the impact on goodwill and on total assets?

The company that has grown through acquisition will record higher goodwill, assets, and equity. Assets are higher for this company as they are capitalized and not expensed like the organically growing company. The ratios based on asset values, including profitability ratios, look better for the grown-by-acquisition company.

To make the two companies comparable, it is recommended to use tangible book value which removes the effect of goodwill and other intangible assets (i.e.. subtract goodwill and intangible assets from stockholder's equity).

Summary

LO.a: Evaluate a company's past financial performance and explain how a company's strategy is reflected in past financial performance.

Evaluating a company's past financial performance helps understand not only what happened but also the reasons behind the company's performance and how the performance reflects the company's strategy.

LO.b: Demonstrate how to forecast a company's future net income and cash flow.

A company's future income and cash flows are projected by forecasting sales growth. Then the analyst uses estimates of profit margins and level of investment in working and fixed capital required to support projected sales, to calculate net income and cash flow.

LO.c: Describe the role of financial statement analysis in assessing the credit quality of a potential debt investment.

Assessing credit risk includes:

- Ability of issuer to meet interest and principal repayment on schedule.
- Cash flow forecast.
- Variability of cash flows.
- Evaluation of business risk and financial risk.

Moody's assigns credit ratings for a company based on the following broad factors:

- Size (total revenue and operating profits).
- Business profile (a company's competitive position, stability of revenues, product and geographic diversity).
- Leverage and coverage ("financial flexibility" and "viability").
- Financial policy (financial risk tolerance and capital structure).

LO.d: Describe the use of financial statement analysis in screening for potential equity investments.

Screening is a process to filter investments (for example stocks, bonds) based on a set of criteria. The criteria may be a set of financial ratios, or other metrics such as dividends paid, market capitalization, etc.

Types of Investors:

- Growth investors: Focused on investing in high earnings growth companies.
- Value investors: Focused on paying a relatively low share price in relation to EPS or BVPS.
- Market-oriented investors: Intermediate category.

Back-testing: Evaluates how a portfolio based on a particular screen would have performed historically. When back-testing:

- Survivorship bias exists if delisted companies are not considered.
- Look-ahead bias exists if the database includes financial data updated for restatements; mismatch between what the investor would have actually known at the time of the investment decision and the information used in back-testing.
- Data-snooping bias might exist if excessive analysis is applied to the same data set.

LO.e: Explain appropriate analyst adjustments to a company's financial statements to facilitate comparison with another company.

Sometimes it is necessary to adjust a company's financial statements. For example, when comparing companies that use different accounting methods or assumptions.

Adjustments include those related to:

- investments
- inventory
- property, plant, and equipment
- goodwill

Practice Questions

1. An analyst has gathered the following information.
Company A: A rapidly growing company that has made many acquisitions in the past.
Company B: A large, diversified company operating in mature industries.
Projecting profit margins into the future on the basis of past results would be *most reliable* for:
 - A. company A.
 - B. company B.
 - C. both company A and company B.
2. While projecting a company's future income and cash flows, an analyst is *least likely* to assume a constant relationship between the company's sales and its:
 - A. interest expenses.
 - B. cost of goods sold.
 - C. non-cash working capital.
3. Which of the following characteristics would credit analysts *least likely* prefer?
 - A. Small scale.
 - B. Greater expected revenue stability.
 - C. Low leverage.
4. Jeff Miller, equity manager, uses a stock screener with the following criteria: earnings growth greater than the median earnings growth percentage and an ROE value higher than the median ROE value. The stocks so selected would be *most appropriate* for portfolios of:
 - A. growth investors.
 - B. value investors.
 - C. both growth and value investors.
5. Which of the following is *most likely* to be a sign of high-quality earnings?
 - A. Smaller use of operating leases than peer companies.
 - B. Use of a higher discount rate in pension plan assumptions.
 - C. A ratio of operating cash flow to net income smaller than 1.0.

Solutions

1. B is correct. Earnings of company B would be stable. Earnings of company A would be very volatile.
2. A is correct. While projecting net income and cash flows we assume that cost of goods sold, operating expenses, and non-cash working capital remain a constant percentage of sales. By looking at the projections we then decide if additional borrowings are needed during the forecast period. Then, if required, the analyst can increase the interest expense accordingly.
3. A is correct. Larger scale, greater expected revenue diversity and low leverage indicate better credit quality.
4. A is correct. Metrics such as earnings growth and momentum are aimed at selecting growth companies; therefore, the portfolio is most appropriate for growth investors.
5. A is correct. Operating lease is an off balancing sheet item and it is preferable to have smaller use of it. B is incorrect because higher discount rate results in lower or you can say less conservative pension plan obligations. C is incorrect because a ratio of operating cash flow to net income below 1.0 can be a warning sign of low-quality earnings.