FINANCIAL STATEMENT ANALYSIS

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Reference Material: Chapter 3 of Textbook

KEY CONCEPTS

1. Common-size Financial Statements
   - Vertical vs Horizontal
2. Financial Ratios
3. Dupont Identity
4. Benchmarking
5. Issues with analyzing financial statements

WHAT IS FINANCIAL STATEMENT ANALYSIS?

Process of analyzing financial statements for decision making purposes

- External: Understand overall health
- Internal: Monitoring tool

GENERAL ISSUE

How do we compare Financial Statements?

- Size is a major issue
- Solution
  - Standardize financial statements
    - Vertical
    - Horizontal
  - Financial Ratios

COMMON-SIZE STATEMENTS

Express all items/accounts in percentage terms

- Balance Sheet
  - Vertical:Express as a percent of total assets
  - Horizontal:Express as a percent of base or last year
- Income Statement
  - Vertical:Express as a percent of Sales
  - Horizontal:Express as a percent of base or last year
- Vertical: Within same period for the same company
- Horizontal:Across reporting periods (base-year or growth)

COMMON SIZE BALANCE SHEET

VERTICAL ANALYSIS

	2017	2018	Common-Size
Cash	84	146	146/3636=4.0%
A/R	165	188	188/3636=5.2%
Inventory	393	422	422/3636=11.6%
PPE	2731	2880	2880/3636=79.2%
Total Assets	3373	3636	3636/3636=100%

COMMON SIZE BALANCE SHEET

HORIZONTAL ANALYSIS

	2017	**2018**	**Common-Size**
Cash	84	146	146/84-1=73.8%
A/R	165	188	188/165-1=13.9%
Inventory	393	422	422/393-1=7.4%
PPE	2731	2880	2880/2731-1=5.5%
Total Assets	3373	3636	3636/3373-1=7.8%

COMMON SIZE INCOME STATEMENT

VERTICAL ANALYSIS

	2018	Common-Size
Sales	2311	2311/2311=100.0%
Cost of Goods Sold	1344	1344/2311=58.2%
Depreciation	276	276/2311=11.9%
EBIT	691	691/2311=29.9%
Net Interest Expense	141	141/2311=6.1%
Taxable Income	550	550/2311=23.8%
Taxes	116	116/2311=5.0%
Net Income	435	435/2311=18.8%

WHAT THE COMMON-SIZE REVEALS

- Large or drastic changes
- Strategy
- Used as part of Overall Financial statement analysis

CAVEATS

- Quarterly Data and Horizontal
  - Use same fiscal quarter
- Horizontal can be misleading due to base year selection
- Best if Vertical and horizontal are used in conjunction.
- Can also compare intra-industry

RATIO ANALYSIS

OVERVIEW

- Why study ratios?
- There are a lot of financial ratios; CFA exam has 40!
- We will cover commonly used ratios
- Not all ratios created from same data, i.e., be careful!

Takeaway: It is trivial to calculate ratios, I want you to *understand* what the ratios mean (Interpret them!!!)

ASK YOURSELF

- How is the ratio computed?
- What is the ratio trying to measure and why?
- What is the unit of measurement?
- Does the sign make sense?
- What does the value indicate?
- How can we improve the company's ratio?

RATIO TYPES

- Liquidity or Short-term solvency
- Asset Management or Turnover
- Financial leverage or Long-term Solvency
- Performance
  - Profitability
  - Market Value

Click here for a full list and description of financial ratios.

SHORT-TERM SOLVENCY

Measure the firm's ability to pay its bills over the short run without undue stress

$$CurrentRatio = \frac{CurrentAssets}{CurrentLiabilities}$$

$$QuickRatio = \frac{CurrentAssets - Inventory}{CurrentLiabilities}$$

$$CashRatio = \frac{Cash}{CurrentLiabilities}$$

$$IntervalMeasure = \frac{CA}{AverageDailyOperatingCosts}$$

This is just a sample of ratios for this category

ASSET MANAGEMENT

How efficiently a firm uses its assets to generate sales

$$InventoryTurnover = \frac{CostofGoodsSold}{Inventory}$$

$$Days'SalesInInventory = \frac{365days}{InventoryTurnover}$$

This is just a sample of ratios for this category

LONG-TERM SOLVENCY

Typically referred to as financial leverage ratios. Measures the firm's ability to meet long-term obligations

$$TotalDebtRatio = \frac{TotalAssets - TotalEquity}{TotalAssets}$$

$$Debt\text{-}EquityRatio = \frac{TotalDebt}{TotalEquity}$$

$$EquityMultiplier = \frac{TotalAssets}{TotalEquity}$$

$$CashCoverageRatio = \frac{EBIT + Depreciation}{Interest}$$

Sidenote: Typically analysts are only concerned with long-term debt.

This is just a sample of ratios for this category

PERFORMANCE: PROFITABILITY

Focuses on bottom line(profits/return). as well as stock market performance.

$$ProfitMargin = \frac{NetIncome}{Sales}$$

$$ReturnonEquity(ROE) = \frac{NetIncome}{TotalEquity}$$

$$ReturnonAssets(ROA) = \frac{NetIncome}{TotalAssets}$$

This is just a sample of ratios for this category

PERFORMANCE: MARKET

Focuses on stock market performance.

$$EarningsPerShare = \frac{NetIncome}{SharesOutstanding}$$

$$PERatio = \frac{PricePerShare}{EarningsPerShare}$$

$$Market\text{-}To\text{-}BookRatio = \frac{MarketValue}{BookValue}$$

This is just a sample of ratios for this category

ENTERPRISE VALUE

Theoretical takeover value of the firm

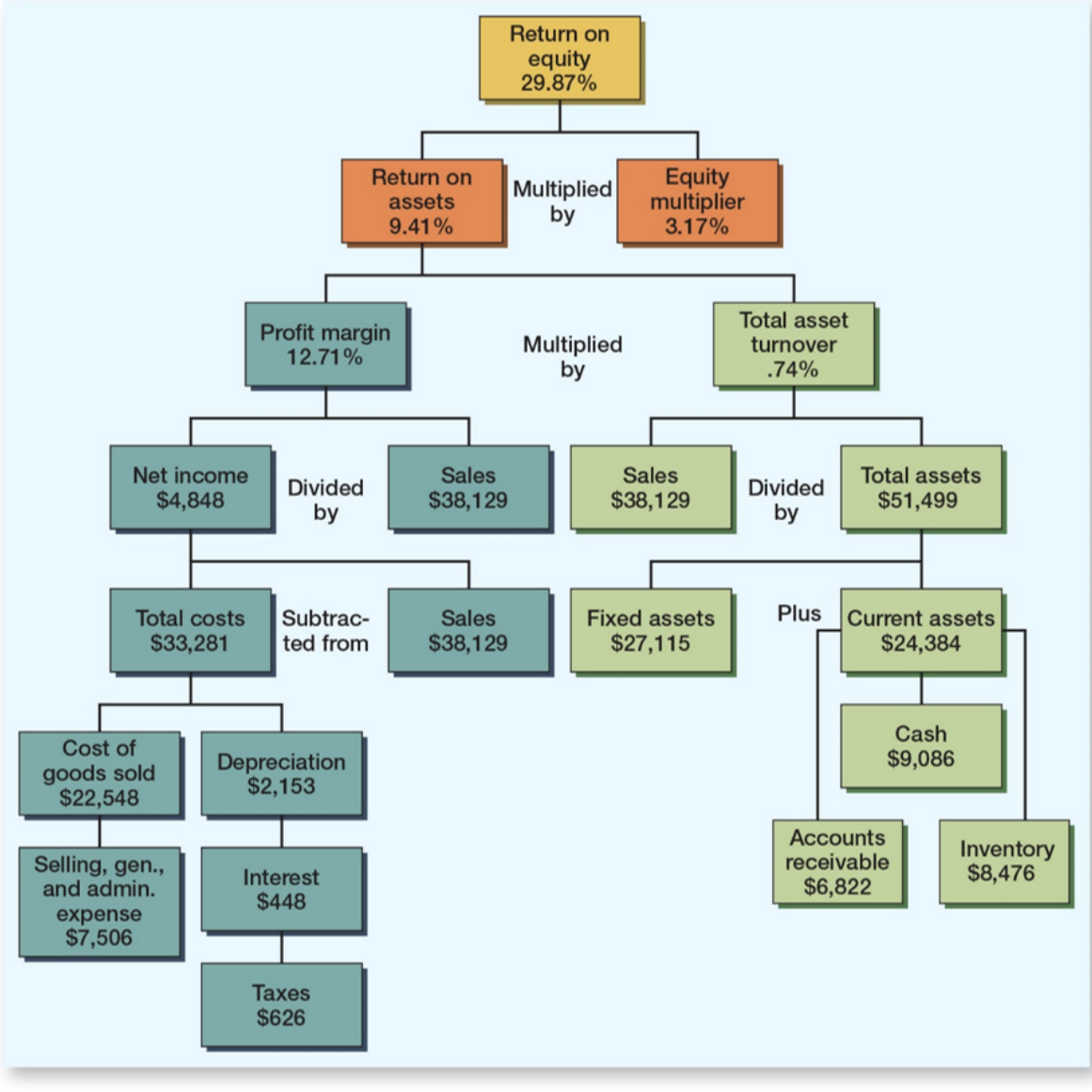
$$EnterpriseValue = MarketCap + BookValueOfLiabilities - Cash$$

DUPONT IDENTITY

Decompose ROE into component parts.

ROE = ProfitMargin x TotalAssetTurnover x EquityMultiplier

FIGURE 3.1 Extended DuPont Chart for DuPont



WHY ANALYZE FINANCIAL STATEMENTS?

- Market data can be difficult to get
- Comparison tool: Internal vs external uses

BENCHMARKING

Ratio in isolation does not paint entire picture, therefore; compare to "something". Benchmarking is finding that something.

COMMON BENCHMARKS

1. Time trend analysis (Horizontal)
2. Peer group analysis (Vertical/Intra Industry)

SIC CODES

ISSUES/CONCERN WITH FINANCIAL STATEMENTS ANALYSIS

- No theory
- Conglomerates
- Globalization
- Different accounting procedures
- Fiscal-year ends and seasonality
- One-time events

FINANCIAL STATEMENT ANALYSIS IN PRACTICE

Edwards

RATIOS TELL A STORY

KEY LEARNING OUTCOMES

- Common-size: vertical vs horizontal
- Financial Ratios!!! Calculate and *interpret.*
- Dupont Identity
- Benchmarking
- Issues with analysis

NEXT TIME

Introduction to Time Value of Money