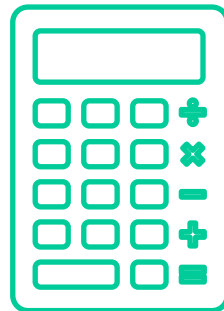


# Chapter 3: Financial Statements

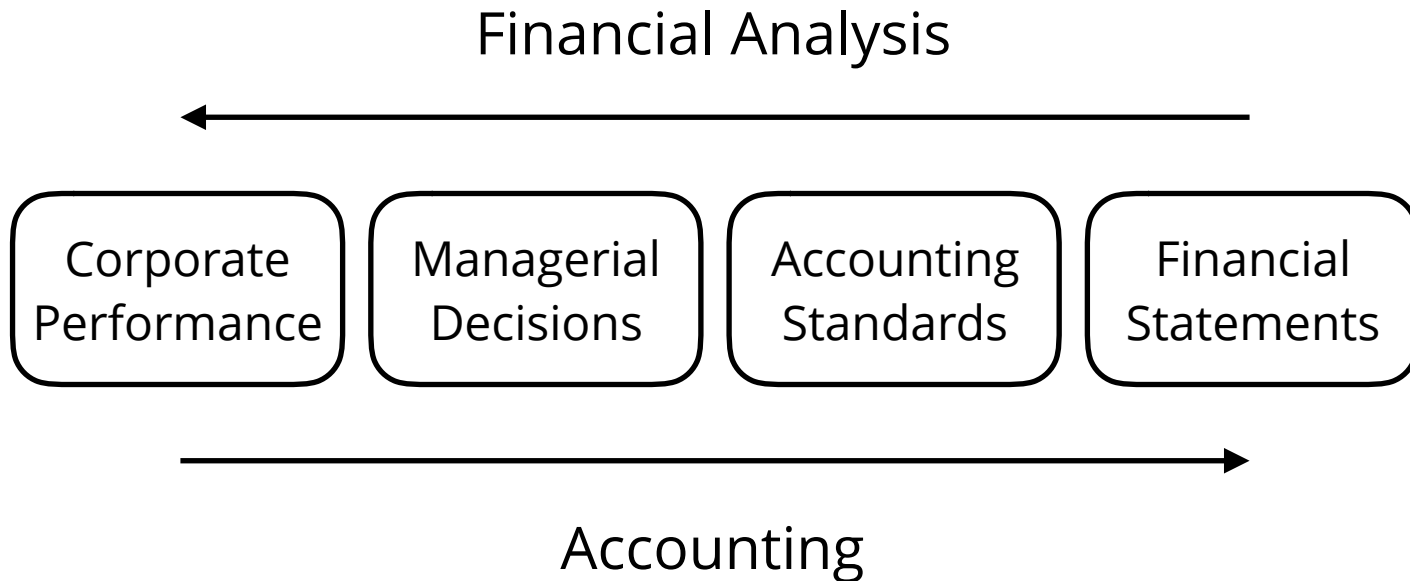


# The Big Picture

- We need to convert accounting values into economic values.
  - Accounting practices (GAAP, IFRS).
  - Manipulation.
  - Omitted information.
    - Off balance sheet assets, lease financing, etc.

# **Financial Statements**

# Financial Statement Analysis



# Balance Sheets

Book Values (Accounting)		Market Values (Finance)	
Assets	Liabilities	Own	Owe
	Equity		Value
<i>Assets = Liabilities + Equity</i>		<i>Value = Own - Owe</i>	

(Resources available to pay)

## **Assets**

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### Current Assets

- Cash & Equivalents
- Inventories
- Other Current Assets

### Long Term Assets

- Net Fixed Assets
  - PPE

### Intangible Assets

(Claims to investors)

## **Liabilities & Equity**

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### Current Liabilities

- Accounts Payable
- Debt Due (< 1 year)
- Other Current Liabilities

### Long Term Capital

- Long Term Debt
- Shareholders Equity
  - Preferred Stock
  - Common Stock

# Income Statement

Sales (Revenues)

- Costs

- Depreciation (Dep)

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EBIT

- Interest (Int)

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EBT

- Tax

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Net Income (NI)

# Other Statements

- **Statement of Cash Flows:** Tracks changes in the cash account as a function of Operating, Investing and Financing activities.
- **Statement of Shareholders Equity:** Tracks changes in book equity and number of shares from net income, dividends, and conversions.



# **Ratios Analysis**

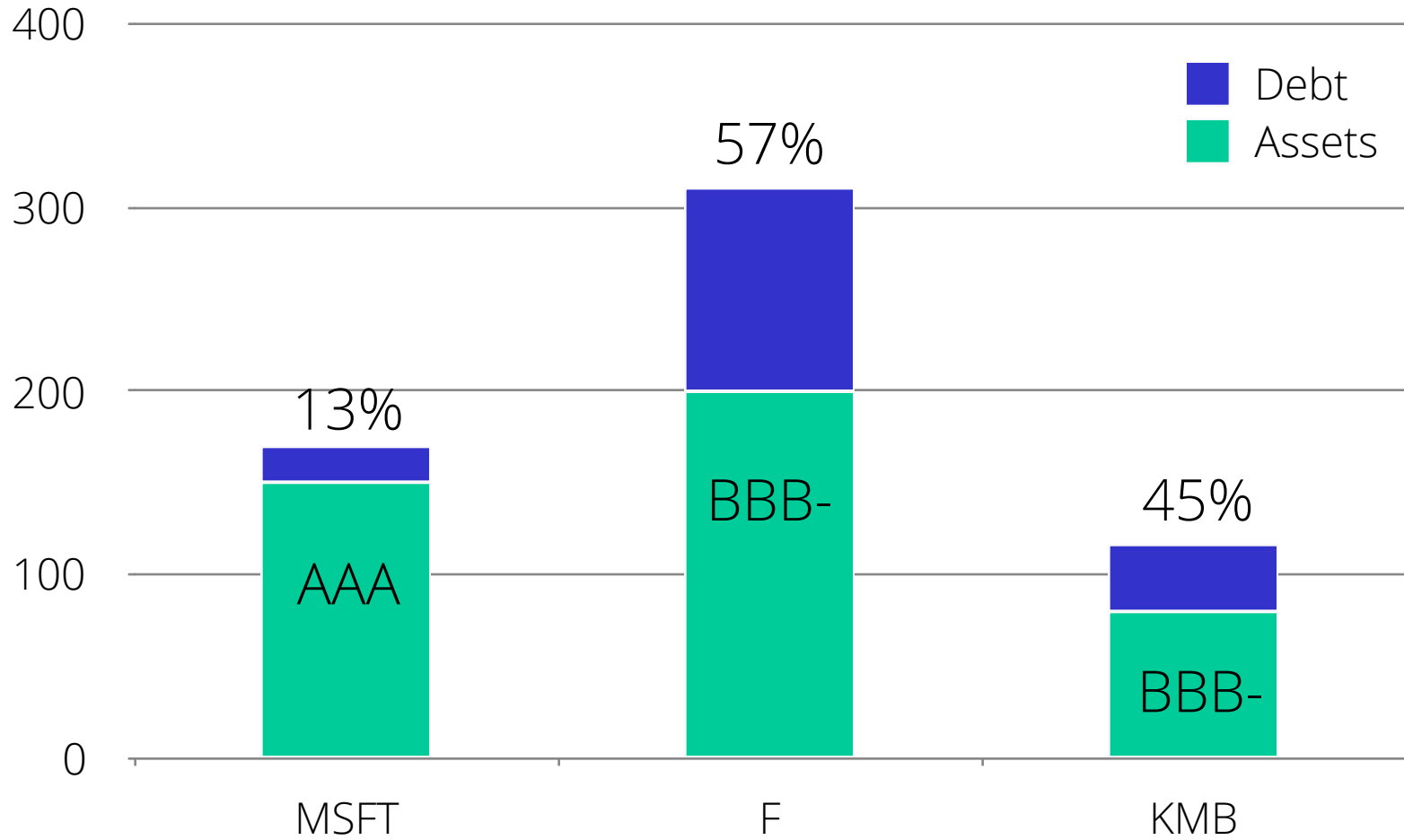
# Ratio Analysis

- Compute financial ratios for a company and compare to:
  - Competitors
  - Industry-wide average
  - Market-wide average
  - Historical ratios

# What matters to bondholders?

- How much principal is owed?
- What resources are available to pay?
- What is the likelihood of default?
- **Leverage Ratios**
  - Debt-to-Assets =  $D / A$
  - Debt-to-Equity =  $D / E$
  - Higher leverage implies riskier debt (lower rating).

# Leverage Example



# What else matters to bondholders?

- How much interest is owed, and what resources are available to pay.
- **Coverage Ratios**
  - Times Interest Earned (TIE) =  $\text{EBIT} / \text{Int}$
  - $\text{EBITDA} / \text{Int}$
- Higher ratios imply less risk and better rating.

# Ratios and Ratings

Financial Ratios by Rating Category, 2013 FY  
(Maturity = 10 years)

Rating	D/A	EBIT/Int	EBITDA/Int	Spread	UST	Yield
AAA	0.17	64.10	71.88	0.51%	2.86%	3.37%
AA	0.32	26.15	58.60	0.74%	2.86%	3.60%
A	0.36	12.60	16.68	0.93%	2.86%	3.79%
BBB	0.38	8.79	12.29	3.38%	2.86%	6.24%
BB	0.39	6.14	8.67	4.00%	2.86%	6.86%
B	0.78	1.22	2.39	6.50%	2.86%	9.36%

# Anything else?

- Not all assets are created equally.
- **Liquid** assets are more easily converted to cash (to pay back debtholders).
- **Liquidity Ratios**
  - Current Ratio = Current Assets / Current Liabilities
  - Quick Ratio = (Cash + Mkt. Securities + A/R) / CL

# What matters to stockholders?

- Shareholders are residual claimants.
- Profit!
- More specifically, return on their equity (ROE).



# Profitability Ratios

- **Return on Assets (ROA)**
- **Return on Equity (ROE)**
- $ROA = EBIT / TA$
- $ROE = NI / E$
- $ROA = ROA + (D/E) \times (ROA - i)$
- Operating Margin =  $EBIT / Sales$
- Net Profit Margin =  $NI / Sales$

# Debt Financing Effects

	Levered	Unlevered
	Assets = 100 Debt = 50 (@15%) Equity = 50	Assets = 100 Debt = 0 Equity = 100
Sales	100.00	100.00
- Costs + Dep	70.00	70.00
EBIT	30.00	30.00
- Interest	7.50	0.00
EBT	22.50	30.00
- Taxes	9.00	12.00
Net Income	13.50	18.00
ROE	27%	18%

# Debt Financing Effects

	Levered	Unlevered
	Assets = 100 Debt = 50 (@15%) Equity = 50	Assets = 100 Debt = 0 Equity = 100
Sales	100.00	100.00
- Costs + Dep	100.00	100.00
EBIT	0.00	0.00
- Interest	7.50	0.00
EBT	(7.50)	0.00
- Taxes	(3.00)	0.00
Net Income	(4.50)	0.00
ROE	-9%	0%

# Risk & Return

- Leverage increased the **volatility** (risk) of outcomes.
- Good outcomes become better, but poor outcomes become worse.
- Leverage also increased the expected return.
- **Higher risk implies higher return.**

# ROE Breakdown (DuPont)

- Cost efficiency x Asset turnover x Leverage
  - Cost efficiency =  $NI / Sales$
  - Asset turnover =  $Sales / TA$
  - Leverage =  $TA / E$
- **$(NI / Sales) \times (Sales / TA) \times (TA / E) = NI / E = ROE$**
- If you want to improve ROE, adjust any of these three ratios.

# “Bottom Line” Ratios

- **Price-to-Earnings:**  $PE = \text{Price} / \text{EPS}$
- **Market-to-Book:**  $(\text{Price} \times \text{Shares}) / \text{Book Equity}$

# Multiples Analysis

- Compare ratios to comparable stock(s).
- Price-to-Earning:
  - Assume that  $PE_0 = PE_1$
  - Then  $P_0 = EPS_0 (P / EPS)_1$
- Market-to-Book:
  - Assume that  $MB_0 = MB_1$
  - Then  $P_0 = (E_{book, 0} / Shares_0) \times (E_{market, 1} / E_{book, 1})$

# Key Steps

- Identify comparable firms.
  - Exclude firms with negative P/E.
  - Exclude outliers.
  - Don't include your own firm!
- Compute the average across comparable firms.
- Evaluate the result: is this reasonable?



# Summary

- Ratios allow us to better interpret financial statements.
- Ratios allow us to compare the performance of multiple firms.
- What if firms know that analyst all use the same ratios?