FIN 2704/2704X

Week 2 Slides

Balance Sheet

Learning objectives

- Understand what an annual report and why it is important
- Understand the Financial Statements included in an annual report
- Understand what a Balance Sheet is

Financial Statements and the Annual Report

- Annual report is a report issued annually by a corporation to its stockholders.
  - Contains basic financial statements as well as management's analysis of the firm's past operations and future prospects.
- Example: Berkshire Hathaway's website: visit www.berkshirehathaway.com for its annual reports for the past 2 decades.
- In general, see also www.annualreportservice.com

Example: Accounting Fraud

BERNIE MADOFF SCANDAL (2008)

COMPANY

Bernard L. Madoff Investment Securities LLC, a Wall Street investment firm founded by Madoff

WHAT HAPPENED

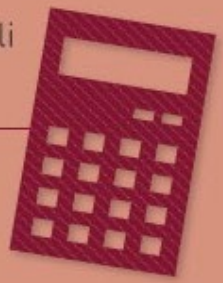
Tricked investors out of **$64.8 billion** through the largest Ponzi scheme ever.

MAIN PLAYERS

Bernie Madoff, his accountant, David Friehling, and Frank DiPascalli

HOW THEY DID IT

Investors were paid returns out of their own money or that of other investors rather than profits.



HOW THEY GOT CAUGHT

Madoff told his sons about his scheme; they reported him to the SEC. He was arrested the next day.

PENALTIES

150 years in prison for Madoff + $170 billion restitution. Prison time for Friehling and DiPascalli.

FUN FACT

Madoff's fraud was revealed just months after the 2008 U.S. financial collapse.

https://visual.ly/community/infographic/business/10-worst-corporate-accounting-scandals-all-time

Accounting fraud example

WORLDCOM SCANDAL (2002)

COMPANY

WORLDCOM

Telecommunications company; now MCI, Inc.

WHAT HAPPENED

Inflated assets by as much as $11 billion, leading to 30,000 lost jobs and $180 billion in losses for investors.

MAIN PLAYER

CEO Bernie Ebbers

HOW HE DID IT

Underreported line costs by capitalizing rather than expensing, and inflated revenues with fake accounting entries.

HOW HE GOT CAUGHT

WorldCom's internal auditing department uncovered **$3.8 billion** in fraud.

PENALTIES

CFO was fired, controller resigned, and the company filed for bankruptcy. Ebbers **sentenced to 25 years for fraud,** conspiracy and filing false documents with regulators.

FUN FACT

Following the scandal, Congress passed the Sarbanes-Oxley Act, introducing the most sweeping set of new business regulations since the 1930s.

https://visual.ly/community/infographic/business/10-worst-corporate-accounting-scandals-all-time

The Annual Report

1. Balance sheet – provides a snapshot of a firm's financial position at one point in time.

2. Income statement – summarizes a firm's revenues and expenses over a given period of time.

3. Statement of retained earnings – shows how much of the firm's earnings were retained, rather than paid out as dividends.

4. Statement of cash flows – reports the impact of a firm's activities on cash flows over a given period of time.

Balance Sheet Characteristics

1. Resources must equal Claims
2. Order of Listing – Highest to Lowest Liquidity
3. Valuing of Items – Generally at original cost (also known as Historical Cost)

   Exceptions: Marketable Securities and Inventories

Sample Balance Sheet

December 31, 2019
Numbers in thousands ($'000s)

Assets		Liabilities	
Cash & Equivalents	3,171	Accounts Payable	313,286
Accounts Receivable	1,095,118	Notes Payable	227,848
Inventory	388,947	Other CL	1,239,651
Other CA	314,454	Total CL	1,780,785
Total CA	1,801,690	LT Debt	1,389,615
Net FA	3,129,754	S/H Equity	
		Common Stock	963,841
		Retained Earnings	797,203
Total Assets	**4,931,444**	Total Liab. & Equity	**4,931,444**

Equity = Assets - Liabilities

Sample Balance Sheet

Numbers in thousands ($'000s)

	2019	2018		2019	2018
Cash & Equiv.	3,171	6,489	A/P	313,286	340,220
A/R	1,095,118	1,048,991	N/P	227,848	86,631
Inventory	388,947	295,255	Other CL	1,239,651	1,098,602
Other CA	314,454	232,304	Total CL	1,780,785	1,525,453
Total CA	1,801,690	1,583,039	LT Debt	1,389,615	871,851
Net FA	3,129,754	2,535,072	C/S	963,841	1,000,000
			R/E	797,203	720,807
Total Assets	**4,931,444**	**4,118,111**	Total Liab. & Equity	**4,931,444**	**4,118,111**

Book Values and Market Values

- **Book Values** (historical costs less accumulated depreciation) are determined by IFRS, GAAP*
- **Market Values** are determined by current trading values in the market

NOTE: Market Value of Shareholders' Equity
= **"Market Capitalization"**
= Share Price x Number of Outstanding Shares

EXAMPLE: Market Value vs Book Value

According to IFRS (and/or GAAP), a firm has equity worth $6 billion, debt worth $4 billion, assets worth $10 billion. The market values the firm's 100 million shares at $75 per share and the debt at $4 billion. What is the market value of the firm's assets?

*International Financial Reporting Standards, Generally Accepted Accounting Principles

Example: Market Value vs. Book Value

Answer:

Since (Assets = Liabilities + Equity), your assets must have a market value of $11.5 billion

Market Value "Balance Sheet"

Assets = $11.5b =	Debt ($4b)	+
	Equity ($7.5b)	

Summary

- Annual report & financial statements
- Balance sheet
  - Assets = Liabilities + Equity
- Book value vs. market value
  - Market value of equity (market capitalization)
  - Market value of assets

Income Statement & Statement of Retained Earnings

Learning objectives

- Understand what an Income Statement is
- Understand what a Statement of Retained Earnings is

Sample Income Statement

For Year Ending December 31, 2019
Numbers in thousands ($'000s)

Revenues	$4,335,491
Cost of Goods Sold	1,762,721
Operating Expenses	1,390,262
Depreciation	362,325
EBIT	$820,183
Interest Expense	52,841
Taxable Income	$767,342
Taxes	295,426
Net Income	$471,916

Shows:

1. Revenues
2. Expenses
3. Taxes associated with those revenues

For some financial period, typically a month, a quarter or a year

Sample Statement of Retained Earnings

Numbers in thousands ($'000s)

Retained Earnings, beginning of year	720,807
Add: Net Income	471,916
	1,192,723
Less: Dividends	-395,520
Retained Earnings, end of year	797,203

How Does Retained Earnings Change?

- Look at the Statement of Retained Earnings:
  - ❖ Add Net income
  - ❖ Less Dividends

  } Δ Retained Earnings

- Dividend Payout Ratio = 395,520/471,916 = 83.81%

Retained Earnings, beginning of year	720,807
Add: Net Income	471,916
	1,192,723
Less: Dividends	-395,520
Retained Earnings, end of year	797,203

Summary

Income Statement

- Revenue
- Expenses
- Taxes

Statement of Retained Earnings

- Add net income
- Less dividend

Statement of Cash Flows

Learning objectives

- Understand the difference between profits and cash flows and why cash flows are important
- Understand what a Statement of Cash Flows is
- Understand what a standardized statements are and why they are useful

Sample Statement of Cash Flows

Numbers in thousands ($'000s)

Cash, beginning of year	6,489	***Financing Activity***	
Operating Activity		Increase in Notes Payable	141,217
Net Income	471,916	Increase in LT Debt	517,764
Plus: Depreciation	362,325	Decrease in Common Stock	-36,159
Increase in Other CL	141,049	Dividends Paid	-395,520
Less: Increase in A/R	-46,127	Net Cash from Financing	227,301
Increase in Inventory	-93,692	Net Decrease in Cash	-3,318
Increase in Other CA	-82,150	**Cash End of Year**	3,171
Decrease in A/P	-26,934		
Net Cash from Operations	726,387		
Investment Activity			
Fixed Asset Acquisition	-957,007		
Net Cash from Investments	-957,007		

Refer to Income Statement

Refer to Balance Sheet

- (Change in net fixed assets + depreciation for the year)

Profits vs. cash flows

Differences

- *"Profits"* subtract depreciation (a non-cash expense)
- *"Profits"* ignore cash expenditures on new fixed assets (the expense is capitalized)
- *"Profits"* record income and expenses at the time of sales, not when the cash exchanges actually occur
- *"Profits"* do not consider changes in working capital (consider, why do changes in working capital not show up in the 'profits',i.e., Income Statement?)

The Importance of Cash Flows

- ***Cash is King:*** firms generate cash and they spend it
- **Sources of cash** (activities that bring in cash):
  - decreases in assets (other than cash)
  - increases in equity and liabilities
- **Uses of cash** (activities that involve cash outflows):
  - increases in assets (other than cash)
  - decreases in equity & liabilities

Statement of Cash Flows

Summarizes the sources and uses of cash over the period under consideration.

Changes divided into 3 major categories:

1. Operating Activities – includes net income and changes in most current accounts (A/P, A/R, Inv)
2. Investment Activities – includes changes in fixed assets
3. Financing Activities – includes changes in notes payable, long-term debt and equity accounts as well as dividends

Understanding the Statement of Cash Flows

The Balance Sheet Identity

Assets = Liabilities + Equity

Current assets + net fixed assets = current liabilities+ lt debt + common stock + retained earnings

Cash + current assets other than cash + net fixed assets =
current liabilities + long-term debt + ***retained earnings*** + common stock

ΔCash = Δ***retained earnings*** - Δcurrent assets other than cash - Δnet fixed assets + Δcurrent liabilities + Δlong-term debt + Δcommon stock

Understanding the Statement of Cash Flows

The Balance Sheet Identity

Assets = Liabilities + Equity

Current assets + net fixed assets = current liabilities+ lt debt + common stock + retained earnings

Net working capital = Current Assets – Current Liabilities

Net working capital + net fixed assets = long-term debt + common stock + retained earnings

CL = non-interest bearing CL + interest-bearing CL

Standardized Financial Statements

- **Common-Size Balance Sheets**
  - Compute all accounts as *a percent of total assets*
- **Common-Size Income Statements**
  - Compute all line items as *a percent of sales*
- **Common-Base Year Statements**
  - Compute all line items as *a percent of base year*

- Standardized statements make it easier to compare financial information, particularly as the company grows

- They are also useful for comparing companies of different sizes, particularly within the same industry

Example: Standardized Balance Sheet

	Balance Sheet			Common Size Balance Sheet	
	2017	2016		2017	2016
Cash	1,000	1,200		15%	18%
Inventory	2,300	2,000		34%	30%
Receivables	1,500	2,000		22%	30%
Investments	2,000	1,500		29%	22%
Total Assets	6,800	6,700		100%	100%

Summary

- Profit vs. cash
  - Importance of cash flows
- Statement of cash flows
  - Operating activities
  - Investment activities
  - Financing activities
- Standardized financial statements

Financial Statements & Market Value

Learning objectives

Understand how to use Financial statements to infer market value

Financial Statements & Market Value

- Detailed market information for assets is needed, but often not readily available
- Although accounting figures are often pale reflections of economic reality, they are frequently the best available

▸ Thus we have to rely on accounting figures as a starting point to extract the information we actually seek

"Objectively determinable current values of many assets do not exist. Faced with a trade-off between relevant, but subjective current values, and irrelevant, but objective historical costs, accountants have opted for irrelevant, but objective historical costs. This means that it is the user's responsibility to make adjustments"

Robert Higgins of Highland Capital Partners

The Finance Concept of Cash Flow

- Cash flow is one of the most important pieces of information that a financial manager can derive from financial statements.
- We will look at how cash is generated from utilizing assets and how it is paid to those that finance the purchase of the assets.
- "Cash is King" in the study of finance. Finance professionals are not concerned with accrual accounting, but rather whether there is enough cash generated to pay bills, investors, etc.
- In finance, our concept of "cash flow from assets" is different from the accounting "Statement of Cash Flows". We care about cash generated from operations over the life of the asset/investment.

We are interested in “Operating Working Capital”

- Business operations generally require investment in net operating working capital.
  - We may need *operating cash* on hand
  - *Inventory*
  - *Accounts receivable*
  - But we may also enjoy increases in *Accounts Payable* from our suppliers

- Funds are required for the above items to support sales although the related cash has not yet been collected from any sale.

- Note that we only consider *operating working capital*.

Operating Working Capital

Working capital stemming from our operating policies (A/R, Inventory, A/P, etc.) and removed from our financing decisions

- Thus, we exclude non-operating working capital such as Notes Payable from our calculation of changes in Net Operating Working Capital

Recall that there are two types of Current Liabilities

1. Interest Bearing Liabilities (a result of ***financing activities***)
   - Short Term Loans (less than 1 year maturity)
   - Notes Payables

   *These are part of our financing choices, **not** our operating choices*

2. Non-Interest Bearing Liabilities (a result of ***operating activities***)
   - Accounts Payables (extended from our suppliers)

Cash Flow Identity:
Cash Flow From Assets* (CFFA)

also referred to as **Free Cash Flows

Cash Flow From Assets (CFFA^) =

Operating Cash Flow (OCF)
– Net Capital Spending (NCS)
– Changes in NOWC (Net Operating Working Capital)

^CFFA → *Cash flow generated from a firm's operating assets after taking into account all present investment needed for its on-going operations.*

Cash Flow From Assets (CFFA) + Interest Tax Shield =

Cash Flow to Creditors + Cash Flow to Stockholders

Note: Interest is tax deductible

- Recall from the Income Statement (slide 17) that any interest payments are deducted from EBIT (Earnings Before Interest and Tax) before calculation of Taxes.
  - This means that interest payments function to reduce the amount of taxes paid. Thus although interest payments are paid out in cash, they also result in the company paying less tax than it otherwise would. The reduction in the amount of tax paid is referred to as the **Interest Tax Shield**.
  - Dividend payments are not tax deductible and do not reduce the amount of taxes paid. Thus dividend payments are paid out in cash, with no offsetting tax shield.

- When determining "cash flow from assets" we do not take into account the interest tax shield
  - We separate operations from financing. Thus, we consider the Interest Tax Shield separately
  - This Tax Shield increases the amount of cash flow available to Creditors and Shareholders

BIZ Corporation example (info)

BIZ Corporation
2015 and 2016 Balance Sheets
(in $ Millions)

Assets			**Liabilities & Stockholder's Equity**		
	2015	2016		2015	2016
Current Assets			***Cuurent Liabilities***		
Cash	$104	$160	A/P	$232	$266
A/R	455	688	N/P	196	123
Inventory	553	555	Total	***$428***	***$389***
Total	***$1,112***	***$1,403***			
			Long-term Debt	***$408***	***$454***
Fixed Assets					
Net PP&E	***$1,644***	***$1,709***	Stockholder's Equity		
			Common Stock and Pain-in Surplus	$600	$640
			Retained Earnings	1320	1629
			Total	***$1,920***	***$2,269***
			Total Liabilities & Stockholder's Equity	**$2,756**	**$3,112**
Total Assets	**$2,756**	**$3,112**			

BIZ Corporation example (info cont.)

BIZ Corporation
2016 Income Statement
(in $ Millions)

Net Sales		$1,509
Cost of Goods Sold		750
Depreciation		65
Earnings Before Interest and Taxes		$694
Interest Paid		70
Taxable Income		$624
Taxes (34%)		212
Net Income		$412
Dividends	$103	
Addition to Retained Earnings	$309	

BIZ Corporation example – Part 1

- Operating Cash Flow:
  OCF = EBIT*(1-Tax Rate) + Depreciation
  = 694*(1 – 0.34 = 0.66) + 65 = 523

- Net Capital Spending:
  NCS = Ending Net Fixed Assets – Beg. Net Fixed Assets + Depreciation
  = 1709 – 1644 + 65 = $130

- Changes in Net Operating Working Capital
  Changes in NOWC = Ending NOWC – Beginning NOWC
  = (160 + 688 + 555 – 266) - (104 + 455 +553 - 232) = $257

- **CFFA** = 523 – 130 – 257 = $136

Example: BIZ Corporation – Part 2

Interest Tax Shield

= Cash generated from the reduction in the amount of taxes paid due to tax deductibility of interest

= $70 * 0.34

= $24

Example: BIZ Corporation – Part 3

(Refer to Balance Sheet & Income Statement)

- Cash Flow to Creditors
  = interest paid – net new borrowing (LT Debt and Notes Payable)
  = $70 – [(123+454) – (196+408)] = $70 – -$27 = $97

- Cash Flow to Stockholders
  = dividends paid – net new equity raised
  = $103 – ($640 - $600) = $63

- Cash flow to Creditors and Stockholders
  = $97 + $63 = $160

✓ Cross Check Answer:
CFFA + Interest Tax Shield = $136 + $24 = $160

Enterprise Value

- Enterprise value of a firm:

  Assesses the value of the underlying business assets (however financed) while excluding the value of any non-operating assets.

  – A common non-operating asset is "excess cash" (i.e., the amount of cash that the firm has that is cash not needed for the firm's operations) but can include other assets like unused land, etc.

- Thus, generally when there are no other non-operating assets:

  Enterprise Value
  = Market Value of Equity + Debt – Excess Cash

- In theory, it is the cost of a company's operating assets if someone were to acquire only those assets.

Computing enterprise value example

***Problem*:** Lulu Co. is a public company with a share price of **$46.78**, **319.1** million shares outstanding, a market-to-book equity ratio of **8.00**, a book debt-equity ratio of **2.62**, and excess cash of **$576** million. What is Lulu's market capitalization? What is its enterprise value?

Share Price	$46.78
Shares outstanding	319.1 million
Market-to-book	8.00
Cash	$576 million
Debt-to-equity (book)	2.62

Computing enterprise value example (answer)

- Lulu, Co. has a market capitalization of
  = 319.1M shares x $46.78/share = $14.93B

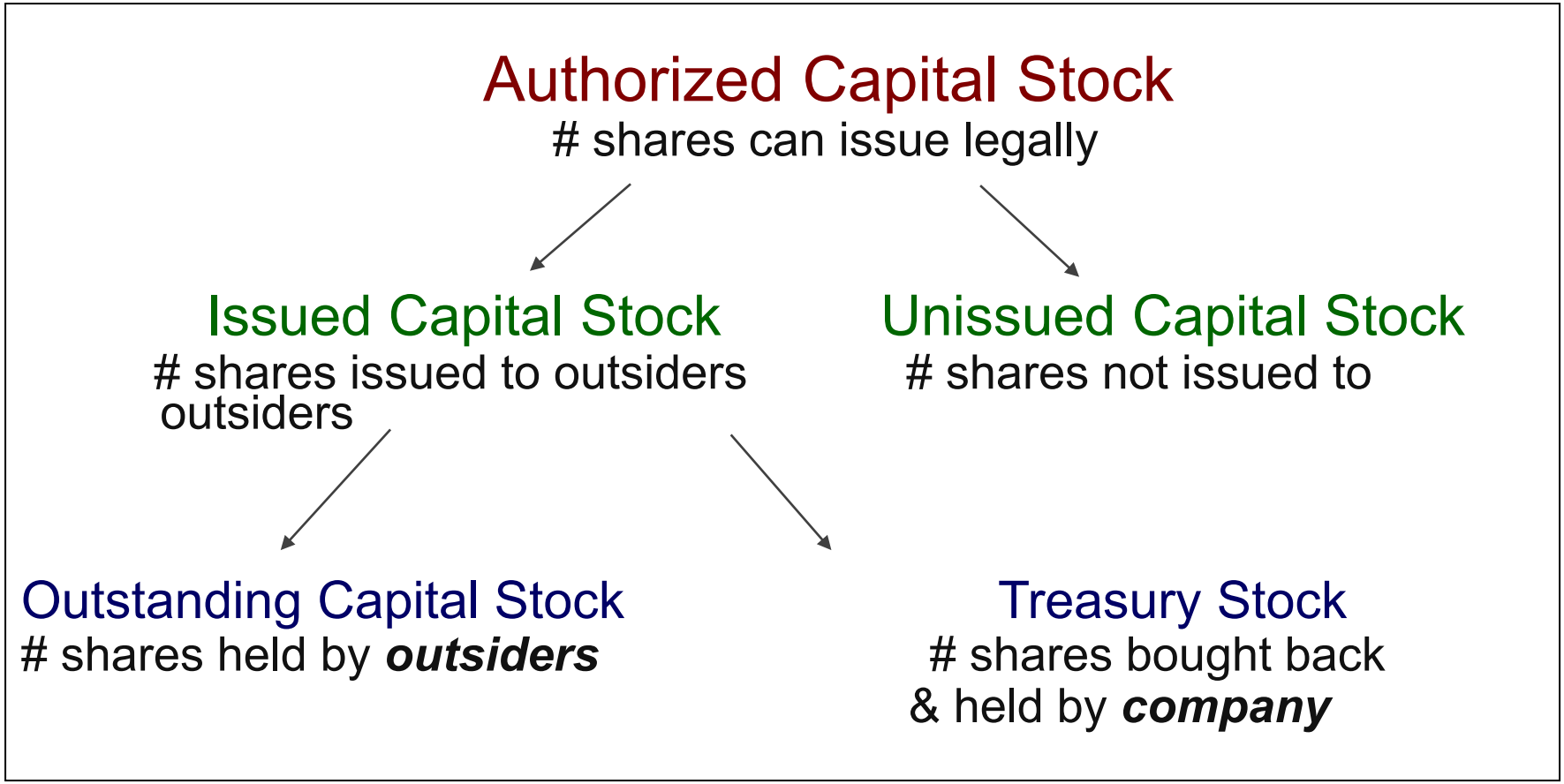
- Since Lulu, Co.'s market-to-book ratio (= market value of equity / book value of equity) = 8.00
  market-to-book ratio = market capitalization / book equity
  then book equity = $14.93B / 8.00 = $1.865B

- Given that the book equity is $1.865B and the book debt-to-equity ratio is 2.62, the total value of Lulu, Co.'s debt is $4.888B

Enterprise value = $14.93B + $4.888B - $0.576B = $19.254B

Basic Stock Concepts

Nature/Composition of Contributed Capital



Summary

- Finance concept of cash flows:
  - CFFA
  - Net Operating Working Capital
  - Interest tax shield

- Enterprise value

Ratio Analyses

Learning objectives

- Know how to compute and interpret important financial ratios
- Be able to compute and interpret the Du Pont Identity

Ratio Analysis

- Ratios are not very helpful by themselves; they need to be compared to something
  - ***Time-Trend Analysis*** (over time)

    Used to see how the firm's performance is changing through time
  - ***Peer Group Analysis*** (with others)

    Compare to similar companies or within industries (e.g. based on SIC codes)
- As we look at each ratio, ask yourself what the ratio is trying to measure and why that information is important
- Ratios are used both internally and externally

Things To Consider Concerning Financial Ratios

1. What aspects of the firm are we attempting to analyze?
2. What information goes into computing a particular ratio and how does that information relate to the aspect of the firm being analyzed?
3. What is the unit of measurement (times, days, percent)?
4. What are the benchmarks used for comparison?
5. What makes a ratio "good" or "bad"?

The 5 Major Categories of Ratios

1. Liquidity ratios (Short-term solvency)
   - Measure the firm's ability to pay bills in the short run
   - Can we make required payments as they fall due?

2. Long-Term Solvency ratios (Financial leverage)
   - Show how heavily the company is in debt
   - Do we have the right mix of debt and equity?

3. Asset management ratios (Turnover / Efficiency)
   - Measure how productively the firm is using its assets
   - Do we have the right amount of assets for the level of sales?

The 5 Major Categories of Ratios

3. Profitability ratios
   - Measure the firm's return on its investments
   - Do sales prices exceed unit costs, and are sales high enough as reflected in PM, ROE, and ROA?

4. Market value ratios
   - Provides indications on the firm's prospects and how the market values the firm
   - Do investors like what they see as reflected in Price-Earning (P/E) and Market-to-Book (M/B) ratios?

Example: D'Leon's Financial Statements

Balance Sheet: Assets

	2019	2018
Cash	85,632	7,282
A/R	878,000	632,160
Inventories	1,716,480	1,287,360
Total CA	2,680,112	1,926,802
Gross FA	1,197,160	1,202,950
Less: Dep.	380,120	263,160
Net FA	817,040	939,790
Total Assets	3,497,152	2,866,592

Example: D'Leon's Financial Statements

Balance Sheet: Liabilities and Stockholder's Equity

	2019	2018
Accts payable	436,800	524,160
Notes payable	300,000	636,808
Accruals	408,000	489,600
Total CL	1,144,800	1,650,568
Long-term debt	400,000	723,432
Common stock	1,721,176	460,000
Retained earnings	231,176	32,592
Total Equity	1,952,352	492,592
Total L & E	3,497,152	2,866,592

Example: D'Leon's Financial Statements

Income Statement

	2019	2018
Sales	7,035,600	6,034,000
COGS	5,875,992	5,528,000
Other expenses	550,000	519,988
EBITDA	609,608	(13,988)
Depr. & Amort.	116,960	116,960
EBIT	492,648	(130,948)
Interest Exp.	70,008	136,012
EBT	422,640	(266,960)
Taxes	169,056	(106,784)
Net income	253,584	(160,176)

Example: D'Leon's Financial Statements

Additional Data

	2019	2018
No. of shares	250,000	100,000
EPS	$1.014	-$1.602
DPS	$0.220	$0.110
Stock price	$12.17	$2.25

1. Liquidity ratios

- Liquidity is the ability to convert assets to cash quickly without a significant loss in value
- Liquidity ratios indicate a firm's ability to meet its maturing short-term obligations

Is high liquidity always good?

Kirk Kerkorian's takeover bid for Chrysler in April, 1995, is an example of investor dissatisfaction with excess liquidity. At the time, Chrysler's management had accumulated $7.3 billion in cash and marketable securities as a cushion against an economic downturn. Mr. Kerkorian instigated a takeover bid because Chrysler's management refused to pay this cash to stockholders.

Example: US Companies' Cash Pile hits $1.7tn

Five US tech giants are hoarding more than half a trillion dollars, a record sum that underscores how cash has become increasingly concentrated at a handful of groups seeking to avoid a tax hit. Apple, Microsoft, Alphabet, Cisco and Oracle had amassed $504bn of cash by the end of 2015, nearly a third of the total $1.7tn held on balance sheets of US non-financial companies, according to a new report from rating agency Moody's.

The ever increasing amount of cash also highlights how US boardrooms are reticent to invest in their businesses, choosing instead to increase dividends, in a sign of the continued anxiety that economic activity could still slow at home or in China.

The failure of companies to invest their cash pile has frustrated investors who say companies are not ploughing enough back into their underlying businesses, in research and development, to reinvigorate sales.

- Financial Times, 20 May 2016

D'Leon's Current & Quick Ratios for 2019

Current ratio = Current assets / Current liabilities
= $2,680 / $1,145 = 2.34x

Quick Ratio = (CA – Inventory) / CL
= ($2,680 - $1,716)/$1,145 = 0.84x

	2019	2018	2017	Ind.
Current Ratio	2.34x	1.20x	2.30x	2.70x
Quick Ratio	0.84x	0.39x	0.94x	1.28x

- Seemingly improving but still below the industry average
- Liquidity position is weak

Other Liquidity Ratios

- Cash Ratio = Cash / CL
  = 86/1,145 = 0.075x

- NWC to Total Assets = NWC / TA
  = (2,680 – 1,145) / 3,497
  = 0.439x
- Interval Measure = CA / avg. daily operating costs
  = 2,680 / ((5,876 + 550)/365)
  = 152.2 days

2. Long-term Solvency

Also known as financial leverage ratios

Financial leverage relates to the extent that a firm relies on debt financing rather than equity.

- Generally, the more debt a firm has, the more likely it is the firm will become unable to fulfill its contractual obligations.

Total Debt Ratio = Total Debt / Total Assets

Variations

- Debt/Equity Ratio = (total assets – total equity) / total equity
- Equity Multiplier = total assets/total equity = 1 + debt/equity ratio
- Long-Term Debt Ratio = long-term debt / (long-term debt + total equity)

Coverage ratios:

- Times Interest Earned Ratio = EBIT / interest
- Cash Coverage Ratio = (EBIT + depreciation) / interest

D'Leon's Long-Term Solvency Ratios

Total Debt Ratio = Total debt / Total assets

= ($1,145 + $400) / $3,497

= 0.442 or 44.2%

Times Interest Earned = EBIT / Interest expense

= $492.6 / $70 = 7.0x

	2019	2018	2017	Ind.
D/A	44.2%	82.8%	54.8%	50.0%
TIE	7.0x	-1.0x	4.3x	6.2x

- At this point, D/A and TIE appear to be better than the industry average.

3. Asset Management Ratios

Also known as activity ratios

They measure how effectively the firm's assets are being managed

- Inventory ratios measure how quickly inventory is produced and sold
- Receivable ratios provide information on the success of the firm in managing its collection from credit customers
- Fixed asset and total asset turnover ratios show how effective the firm is in using its assets to generate sales

D'Leon's Inventory turnover for 2019

Inventory Turnover = COGS / Inventory = $5,876/$1,716 = *3.42x*

	2019	2018	2017	Ind.
Inventory Turnover	3.42x	4.30x	4.51x	4.82x

- Inventory turnover below industry average. D'Leon might have old inventory, or its control might be poor.

Days' Sales in Inventory = 365 / Inventory Turnover

= 365/3.42 = 106.7 days

	2019	2018	2017	Ind.
Days' Sales in Inventory	106.7 days	84.9 days	80.9 days	75.7 days

D'Leon's Receivables Turnover for 2019

Rec. turnover = Sales / Receivables

= $7,036 / $878 = 8.01x sales

	2019	2018	2017	Ind.
Receivables Turnover	8.01x	9.55x	9.76x	11.4x

Days Sales Outstanding or Account Receivable Days or Average Collection Period: the average number of days after making a sale before receiving cash

$$\text{DSO} = \frac{\text{Accounts Receivable}}{\text{Average Daily Sales}} \longrightarrow = \text{Sales} / 365$$

or

DSO = 365 / Receivables Turnover

D'Leon's Days Sales Outstanding for 2019

DSO = Accounts Receivable / Average Daily Sales

= Accounts Receivable / Sales/365

= $878 / ($7,036/365)

= $878 / $19.277

= 45.6 days

	2019	2018	2017	Ind.
DSO	45.6	38.2	37.4	32.0

- D'Leon collects on sales too slowly, and this is getting worse.
- D'Leon has a poor credit policy.

D'Leon's Fixed Asset and Total Asset Turnover Ratios for 2019

FA Turnover = Sales / Net fixed assets
= $7,036 / $817 = 8.61x

TA Turnover = Sales / Total assets
= $7,036 / $3,497 = 2.01x

	2019	2018	2017	Ind.
FA TO	8.6x	6.4x	10.0x	7.0x
TA TO	2.0x	2.1x	2.3x	2.6x

- FA turnover exceeded the industry average in 2019
- TA turnover below the industry average. Caused by excessive currents assets (A/R and Inv)

4. Profitability

Measure how successfully a business earns a return on its investment

Show the combined effects of liquidity, asset management, and debts on operating results

- Profit margin = Net income / Sales = $253.6 / $7,036 = 3.6%
- BEP (Basic Earning Power) = EBIT/Total assets = $492.6 /$3,497 = 14.1%

BEP removes the effects of taxes and financial leverage. It is useful for comparison

	2019	2018	2017	Ind.
PM	3.6%	-2.7%	2.6%	3.5%
BEP	14.1%	-4.6%	13.0%	19.1%

- Profit margin improving.
- BEP has improved substantially, but still below the industry average. Room for improvement.

Other Profitability Ratios

Return on Assets

ROA = Net income / Total assets = $253.6 / $3,497 = 7.3%

Return on Equity

ROE = Net income* / Total common equity = $253.6 / $1,952 = 13.0%

*If there is preferred dividend, you should deduct it from net income

	2019	2018	2017	Ind.
ROA	7.3%	-5.6%	6.0%	9.1%
ROE	13.0%	-32.5%	13.3%	18.2%

- Both ratios rebounded from the previous year, but are still below the industry average. More improvement needed.
- Wide variations in ROE illustrate the effect that leverage can have on profitability.

Effects of Debt on ROA and ROE

- ROA is lowered by debt
  - Interest expense lowers net income, which also lowers ROA
- However, the use of debt lowers equity, and if equity is lowered more than net income, ROE would increase

Problems with ROE

- ROE and shareholder wealth are correlated, but problems can arise when ROE is the sole measure of performance
  - ROE does not consider risk
  - ROE does not consider the amount of capital invested
  - Might encourage managers to make investment decisions that do not benefit shareholders
- ROE focuses only on return. It is better to have measures that consider both risk and return.

5. Market Value Ratios

A set of ratios that relate the firm's stock price to its earnings, cash flows and book value per share

1. P/E: How much investors are willing to pay for $1 of earnings.
2. M/B: How much investors are willing to pay for $1 of book value equity.

For each ratio, in general, the higher the number, the better.

- P/E = Price / Earnings per share = $12.17 / $1.014 = 12.0x
- M/B = Mkt price per share / Book value per share
  = $12.17 / ($1,952 / 250) = 1.56x

Book value of equity

	2019	2018	2017	Ind.
P/E	12.0x	-1.4x	9.7x	14.2x
M/B	1.56x	0.5x	1.3x	2.4x

The Dupont System

- Some profitability and efficiency measures can be linked in useful ways
- These relationships are often referred to as the Du Pont system in recognition of the chemical company that popularized them

Deriving the extended Du Pont

- $ROE = \frac{NI}{TE}$
- Multiply by TA/TA (= 1) and then rearrange
  - $ROE = \frac{NI}{TE} \times \frac{TA}{TA}$
  - $ROE = \frac{NI}{TA} \times \frac{TA}{TE} = ROA * EM$
- Multiply by Sales/Sales (=1) and then rearrange
  - $ROE = \frac{NI}{TA} \times \frac{TA}{TE} \times \frac{Sales}{Sales}$
  - $ROE = \frac{NI}{Sales} \times \frac{Sales}{TA} \times \frac{TA}{TE}$

$ROE = PM * TA\ TO * EM$

The Three Ratios of the Dupont Identity

$$ROE = PM * TA\ TO * EM$$

1. Profit margin (PM) is a measure of the firm's operating efficiency – how well does it control costs
2. Total asset turnover (TA TO) is a measure of the firm's asset use efficiency – how well does it manage its assets
3. Equity multiplier (EM) is a measure of the firm's financial leverage

D'Leon's Extended DuPont Equation: Return on Equity

ROE = (Profit margin) x (TA turnover) x (Equity multiplier)

= 3.6% x 2 x 1.8

= 13.0%

	PM	TA TO	EM	**ROE**
2017	2.6%	2.3	2.2	**13.3%**
2018	-2.7%	2.1	5.8	**-32.5%**
2019	3.6%	2.0	1.8	**13.0%**
Ind.	3.5%	2.6	2.0	**18.2%**

Ratio Analysis: Potential Problems/ Limitations

- Comparison with industry averages is difficult if the firm operates many different divisions (***a diversified firm***).
- "Average" performance is not necessarily good. Use the leader's?
- Seasonal factors can distort ratios.
- Window dressing techniques can make statements and ratios look better.
- Different accounting and operating practices can distort comparisons.
- Sometimes it is difficult to tell if a ratio value is "good" or "bad."
- Often, different ratios give different signals, so it is difficult to tell, on balance, whether a company is in a strong or weak financial condition.

Some Qualitative Factors

Analysts should also consider the followings when evaluating a company's likely future financial performance:

- Are the company's revenues tied to a single customer?
- To what extent are the company's revenues tied to a single product?
- To what extent does the company rely on a single supplier?
- What percentage of the company's business is generated overseas?
- What is the competitive situation?
- What is the company's legal and regulatory environment?

Summary

Financial Statements are used for:

1. Credit Decisions
2. Risk Analysis
3. Financial Distress Prediction
4. Management Evaluations
5. Investment Selection

Du Pont Identity: ROE = PM * TA TO * EM