Review of Financial Statement Analysis

Lecture Outline

- The Balance Sheet
- The Income Statement
- Cash Flow
- Financial Ratios

Key Concepts and Skills

- Understand the information provided by financial statements
- Differentiate between book and market values
- Know the difference between average and marginal tax rates
- Know the difference between accounting income and cash flow
- Calculate a firm’s cash flow

Balance Sheet

- The balance sheet is a snapshot of the firm's assets and liabilities at a given point in time
- Balance Sheet Identity
  - Assets = Liabilities + Stockholders' Equity
- Assets are listed in order of liquidity
  - Ease of conversion to cash
  - Without significant loss of value

Balance Sheet

Total Value of Assets:

Current Assets

Fixed Assets

1 Tangible

2 Intangible

Total Firm Value to Investors:

Current Liabilities

Long-Term Debt

Shareholders' Equity

U.S. Composite Corporation Balance Sheet

	2010	2009
Current assets:		
Cash and equivalents	$140	$107
Accounts receivable	294	270
Inventories	269	280
Other	58	50
Total current assets	$761	$707
Fixed assets:		
Property, plant, and equipment	$1,423	$1,274
Less accumulated depreciation	(550)	(460)
Net property, plant, and equipment	873	814
Intangible assets and other	245	221
Total fixed assets	$1,118	$1,035
Total assets	$1,879	$1,742

The assets are listed in order by the length of time it would normally take a firm with ongoing operations to convert them into cash.

Clearly, cash is much more liquid than property, plant, and equipment.

Market Vs. Book Value

- The balance sheet provides the book value of the assets, liabilities and equity.
- Market value is the price at which the assets, liabilities or equity can actually be bought or sold.
- Market value and book value are often very different. Why?
- Which is more important to the decision-making process?

Klingon Corporation

KLINGON CORPORATION					
Balance Sheets					
Market Value versus Book Value					
	Book	Market		Book	Market
Assets			Liabilities and Shareholders' Equity		
NWC	$ 400	$ 600	LTD	$ 500	$ 500
NFA	700	1,000	SE	600	1,100
	1,100	1,600		1,100	1,600

Klingon Corporation

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Balance Sheets					
Market Value versus Book Value					
	Book	Market		Book	Market
Assets			Liabilities and Shareholders' Equity		
CA	$ 400	$ 600	CL	0	0
			LTD	$ 500	$ 500
NFA	700	1,000	SE	600	1,100
	1,100	1,600		1,100	1,600

Market Vs. Book Value

- Equity
  - Book Value of Equity
    - Book Value of Assets – Book Value of Liabilities
      - Could possibly be negative
  - Market Value of Equity (Market Capitalization)
    - Market Price per Share $\times$ Number of Shares Outstanding
      - Cannot be negative

Net Working Capital

- Net Working Capital ≡

  Current Assets – Current Liabilities

- NWC usually grows with the firm

U.S.C.C. Balance Sheet

$252m = $707- $455

	2010	2009
Current assets:		
Cash and equivalents	$140	$107
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Inventories	269	280
Other	58	50
Total current assets	$761	$707

	2010	2009
Current Liabilities:		
Accounts payable	$213	$197
Notes payable	50	53
Accrued expenses	223	205
Total current liabilities	$486	$455

$275m = $761m- $486m

Here we see NWC grow to $275 million in 2010 from $252 million in 2009.

$23 million

This increase of $23 million is an investment of the firm.

Income Statement

- The income statement is more like a video of the firm's operations for a specified period of time.
- You generally report revenues first and then deduct any expenses for the period
- The accounting definition of income is:

$$\text{Revenue} - \text{Expenses} \equiv \text{Income}$$

U.S.C.C. Income Statement

The operations section of the income statement reports the firm's revenues and expenses from principal operations.

Total operating revenues	$2,262
Cost of goods sold	1,655
Selling, general, and administrative expenses	327
Depreciation	90
Operating income	$190
Other income	29
Earnings before interest and taxes (EBIT)	$219
Interest expense	49
Pretax income	$170
Taxes	84
Current: $71	
Deferred: $13	
Net income	$86
Addition to retained earnings	$43
Dividends:	$43

U.S.C.C. Income Statement

The non-operating section of the income statement includes all financing costs, such as interest expense.

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Usually a separate section reports the amount of taxes levied on income.

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Net income is the "bottom line."

Accounting for Farmville/Facebook

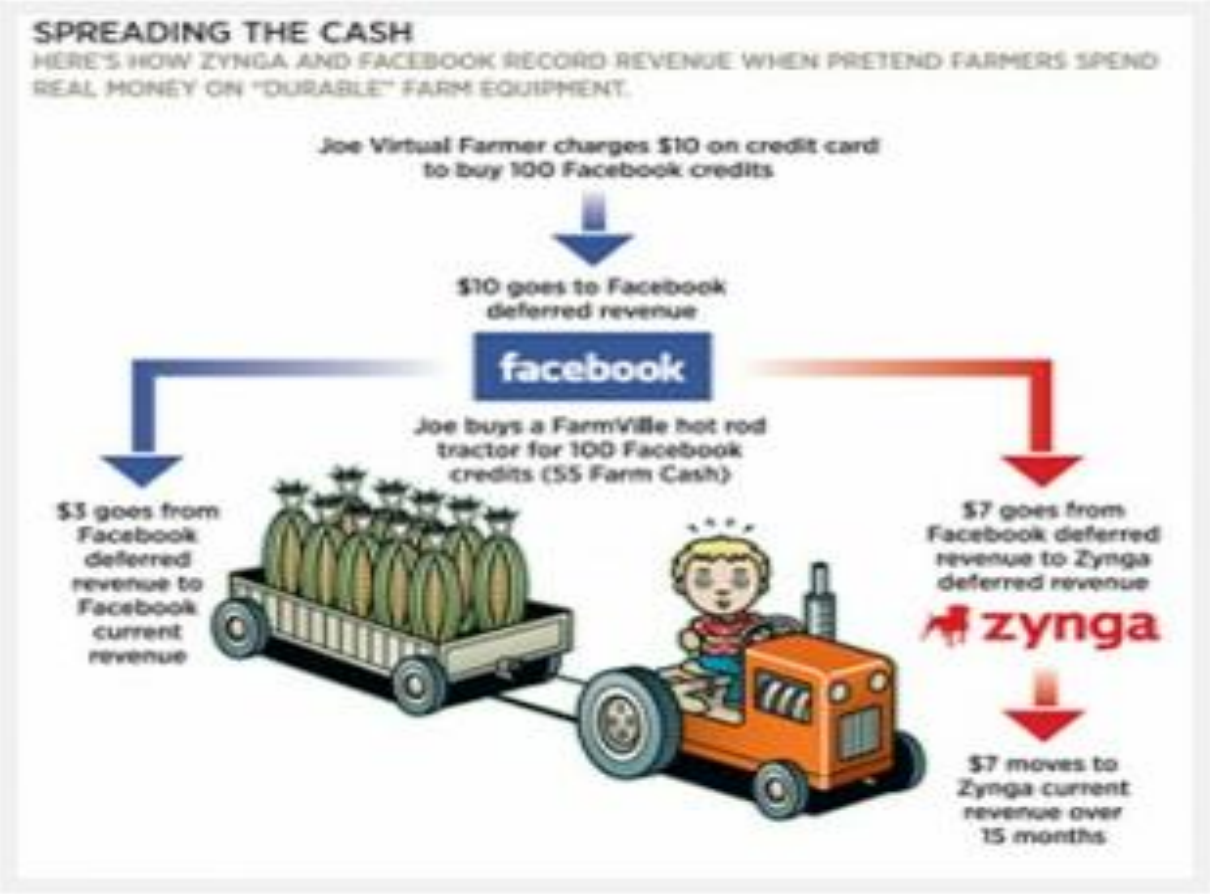

Illustration By Peter And Maria Hoey For Forbes

The Concept of Cash Flow

- Cash flow is one of the most important pieces of information that a financial manager can derive from financial statements
- The statement of cash flows does not provide us with the same information that we are looking at here
- 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 Flow From Assets

- Cash Flow From Assets (CFFA) = Cash Flow to Creditors + Cash Flow to Stockholders
- Cash Flow From Assets = Operating Cash Flow – Net Capital Spending – Changes in NWC

U.S.C.C. Financial Cash Flow

Cash Flow of the Firm	
Operating cash flow (Earnings before interest and taxes plus depreciation minus taxes)	$238
Capital spending (Acquisitions of fixed assets minus sales of fixed assets)	-173
Additions to net working capital	-23
Total	$42
Cash Flow of Investors in the Firm	
Debt (Interest plus retirement of debt minus long-term debt financing)	$36
Equity (Dividends plus repurchase of equity minus new equity financing)	6
Total	$42

Operating Cash Flow:

EBIT	$219
Depreciation	$90
Current Taxes	-$71
OCF	$238

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Capital Spending

Purchase of fixed assets	$198
Sales of fixed assets	-$25
Capital Spending	$173

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This increase of $23 million is the addition to NWC.

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Cash Flow to Creditors

Interest	$49
Retirement of debt	73
Debt service	122
Proceeds from new debt sales	-86
Total	$36

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Cash Flow to Stockholders	
Dividends	$43
Repurchase of stock	6
Cash to Stockholders	49
Proceeds from new stock issue	-43
Total	$6

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The cash flow received from the firm's assets must equal the cash flows to the firm's creditors and stockholders:

$$CF(A) \equiv \underbrace{CF(B) + CF(S)}$$

Cash Flow Summary

I. The cash flow identity

Cash flow from assets = Cash flow to creditors (bondholders)
+ Cash flow to stockholders (owners)

II. Cash flow from assets

Cash flow from assets = Operating cash flow
− Net capital spending
− Change in net working capital (NWC)

where:

Operating cash flow = Earnings before interest and taxes (EBIT)
+ Depreciation − Taxes

Net capital spending = Ending net fixed assets − Beginning net fixed assets
+ Depreciation

Change in NWC = Ending NWC − Beginning NWC

III. Cash flow to creditors (bondholders)

Cash flow to creditors = Interest paid − Net new borrowing

IV. Cash flow to stockholders (owners)

Cash flow to stockholders = Dividends paid − Net new equity raised

Statement of Cash Flows

- Net Income typically does NOT equal the amount of Cash the firm has earned.
  - Non-Cash Expenses
    - Depreciation and Amortization
  - Uses of Cash not on the Income Statement
    - Investment in Property, Plant, and Equipment

The Statement of Cash Flows

- There is an official accounting statement called the statement of cash flows.
- This helps explain the change in accounting cash, which for U.S. Composite is $33 million in 2010.
- The three components of the statement of cash flows are:
  - Cash flow from operating activities
  - Cash flow from investing activities
  - Cash flow from financing activities

U.S.C.C. Cash Flow from Operations

To calculate cash flow from operations, start with net income, add back non-cash items like depreciation and adjust for changes in current assets and liabilities (other than cash).

Operations	
Net Income	$86
Depreciation	90
Deferred Taxes	13
Changes in Assets and Liabilities	
Accounts Receivable	-24
Inventories	11
Accounts Payable	16
Accrued Expenses	18
Other	-8
Total Cash Flow from Operations	$202

U.S.C.C. Cash Flow from Investing

Cash flow from investing activities involves changes in capital assets: acquisition of fixed assets and sales of fixed assets (*i.e.*, net capital expenditures).

Acquisition of fixed assets	-$198
Sales of fixed assets	25
Total Cash Flow from Investing Activities	-$173

U.S.C.C. Cash Flow from Financing

Cash flows to and from creditors and owners include changes in equity and debt.

Retirement of debt (includes notes)	-$73
Proceeds from long-term debt sales	86
Change in notes payable	-3
Dividends	-43
Repurchase of stock	-6
Proceeds from new stock issue	43
Total Cash Flow from Financing	$4

U.S.C.C. Statement of Cash Flows

The statement of cash flows is the addition of cash flows from operations, investing, and financing.

Operations	
Net Income	$86
Depreciation	90
Deferred Taxes	13
Changes in Assets and Liabilities	
Accounts Receivable	-24
Inventories	11
Accounts Payable	16
Accrued Expenses	18
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Total Cash Flow from Operations	$202
Investing Activities	
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Total Cash Flow from Investing Activities	-$173
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Retirement of debt (includes notes)	-$73
Proceeds from long-term debt sales	86
Notes Payable	-3
Dividends	-43
Repurchase of stock	-6
Proceeds from new stock issue	43
Total Cash Flow from Financing	$4
Change in Cash (on the balance sheet)	$33

Categories of Financial Ratios

- Short-term solvency or liquidity ratios
- Long-term solvency or financial leverage ratios
- Asset management or turnover ratios
- Profitability ratios
- Market value ratios

Computing Liquidity Ratios

- Current Ratio = CA / CL
- Quick Ratio = (CA – Inventory) / CL
- Cash Ratio = Cash / CL

Computing Liquidity Ratios

- Suppose a firm were to pay off some of its suppliers and short-term creditors. What would happen to the current ratio?
- Suppose a firm buys some inventory. What happens in this case?
- What happens if a firm sells some merchandise?

Computing Leverage Ratios

- Total Debt Ratio = (TA – TE) / TA
- Debt/Equity = TD / TE
  - Debt/Equity =Total debt ratio / (1 – total debt ratio)
- Equity Multiplier = TA / TE = 1 + D/E

Computing Coverage Ratios

- Times Interest Earned = EBIT / Interest
- Cash Coverage = (EBIT + Depreciation + Amortization) / Interest
- Interest Bearing Debt / EBITDA

Computing Inventory Ratios

- Inventory Turnover = Cost of Goods Sold / Inventory
- Days' Sales in Inventory = 365 / Inventory Turnover

Computing Receivables Ratios

- Receivables Turnover = Sales / Accounts Receivable
- Days' Sales in Receivables = 365 / Receivables Turnover

Computing Payables Ratios

- Payables Turnover = COGS / Accounts Payable
- Days' Sales in Payables = 365 / Payables Turnover

Computing Total Asset Turnover

- Total Asset Turnover = Sales / Total Assets
  - It is not unusual for TAT < 1, especially if a firm has a large amount of fixed assets.

Computing Profitability Measures

- Profit Margin = Net Income / Sales
- EBITDA Margin = EBITDA / Sales
- Return on Assets (ROA) = Net Income / Total Assets
- Return on Equity (ROE) = Net Income / Total Equity

Which industries have high margin?

Computer Software	Shoe
Drug	Apparel
Semiconductor	Hotel
Internet	Air Transport
Beverage	Steel
Coal	Retail Store
Computers/Peripherals	Automotive
Restaurant	Newspaper
Tobacco	

Industry Names	*Gross Margin*	*Operating Margin*	*Net Margin*
Computer Software	77.44%	31.35%	24.78%
Drug	73.12%	21.91%	17.99%
Semiconductor	59.69%	22.76%	17.82%
Internet	53.69%	18.25%	16.00%
Beverage	59.01%	20.45%	13.99%
Coal	29.09%	15.94%	12.00%
Computers/Peripherals	32.83%	14.15%	10.74%
Restaurant	31.65%	15.82%	10.70%
Tobacco	33.90%	20.61%	8.46%
Shoe	46.44%	11.34%	8.44%
Apparel	45.71%	10.97%	6.72%
Hotel	34.67%	12.61%	6.29%
Air Transport	26.54%	8.78%	3.76%
Steel	16.68%	5.83%	3.52%
Retail Store	26.60%	5.84%	3.45%
Automotive	24.59%	6.99%	3.36%
Newspaper	53.69%	14.59%	3.11%

Computing Market Value Measures

- Market Capitalization = share price x shares outstanding
- EPS=Net income/shares outstanding
- PE Ratio = Price per share / Earnings per share
- Market-to-book ratio = market value per share / book value per share
- Enterprise Value (EV) = Market capitalization + Market value of interest bearing debt – cash
- EV Multiple = EV / EBITDA


Google™


amazon

Data from yahoo finance, 2014/09/04	EPS	Share Price	P/E
	5.96	98.1	16.4
	2.67	45.3	17
	0.64	346	540
	19.09	582	30.5

TABLE 2.4 A Summary of Key Financial Ratios

Profitability Ratios	
Gross Margin	$\frac{\text{Gross Profit}}{\text{Sales}}$
Operating Margin	$\frac{\text{Operating Income}}{\text{Sales}}$
EBIT Margin	$\frac{\text{EBIT}}{\text{Sales}}$
Net Profit Margin	$\frac{\text{Net Income}}{\text{Sales}}$
Liquidity Ratios	
Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$
Quick Ratio	$\frac{\text{Cash \& Short-term Investments} + \text{Accounts Receivable}}{\text{Current Liabilities}}$
Cash Ratio	$\frac{\text{Cash}}{\text{Current Liabilities}}$
Working Capital Ratios	
Accounts Receivable Days	$\frac{\text{Accounts Receivable}}{\text{Average Daily Sales}}$
Accounts Payable Days	$\frac{\text{Accounts Payable}}{\text{Average Daily Cost of Sales}}$
Inventory Days	$\frac{\text{Inventory}}{\text{Average Daily Cost of Sales}}$
Accounts Receivable Turnover	$\frac{\text{Annual Sales}}{\text{Accounts Receivable}}$
Accounts Payable Turnover	$\frac{\text{Annual Cost of Sales}}{\text{Accounts Payable}}$
Inventory Turnover	$\frac{\text{Annual Cost of Sales}}{\text{Inventory}}$
Interest Coverage Ratios	
EBIT/Interest Coverage	$\frac{\text{EBIT}}{\text{Interest Expense}}$
EBITDA/Interest Coverage	$\frac{\text{EBITDA}}{\text{Interest Expense}}$
Leverage Ratios	
Debt-Equity Ratio	$\frac{\text{Total Debt}}{\text{Book (or Market) Value of Equity}}$
Debt-to-Capital Ratio	$\frac{\text{Total Debt}}{\text{Total Equity} + \text{Total Debt}}$
Debt-to-Enterprise Value Ratio	$\frac{\text{Net Debt}}{\text{Enterprise Value}}$
Equity Multiplier (book)	$\frac{\text{Total Assets}}{\text{Book Value of Equity}}$
Equity Multiplier (market)	$\frac{\text{Enterprise Value}}{\text{Market Value of Equity}}$
Valuation Ratios	
Market-to-Book Ratio	$\frac{\text{Market Value of Equity}}{\text{Book Value of Equity}}$
Price-Earnings Ratio	$\frac{\text{Share Price}}{\text{Earnings per Share}}$
Enterprise Value Ratios	$\frac{\text{Enterprise Value}}{\text{EBIT or EBITDA or Sales}}$
Operating Returns	
Asset Turnover	$\frac{\text{Sales}}{\text{Total Assets}}$
Return on Equity (ROE)	$\frac{\text{Net Income}}{\text{Book Value of Equity}}$
Return on Assets (ROA)	$\frac{\text{Net Income} + \text{Interest Expense}}{\text{Book Value of Assets}}$
Return on Invested Capital (ROIC)	$\frac{\text{EBIT}\ (1 - \text{Tax Rate})}{\text{Book Value of Equity} + \text{Net Debt}}$

The Du Pont Identity

- ROE = NI / TE
- Multiply by 1 and then rearrange:
  - ROE = (NI / TE) (TA / TA)
  - ROE = (NI / TA) (TA / TE) = ROA * EM
- Multiply by 1 again and then rearrange:
  - ROE = (NI / TA) (TA / TE) (Sales / Sales)
  - ROE = (NI / Sales) (Sales / TA) (TA / TE)
  - ROE = PM * TAT * EM

Using the Du Pont Identity

- ROE = PM * TAT * EM
  - Profit margin is a measure of the firm's operating efficiency – how well it controls costs.
  - Total asset turnover is a measure of the firm's asset use efficiency – how well it manages its assets.
  - Equity multiplier is a measure of the firm's financial leverage.

Calculating the Du Pont Identity

- ROA = 10.1% and EM = 1.39
  - ROE = 10.1% * 1.385 = 14.0%
- PM = 15.7% and TAT = 0.64
  - ROE = 15.7% * 0.64 * 1.385 = 14.0%

Benchmarking

- Ratios are not very helpful by themselves; they need to be compared to something
- Time-Trend Analysis
  - Used to see how the firm's performance is changing through time
  - Internal and external uses
- Peer Group Analysis
  - Compare to similar companies or within industries
  - SIC and NAICS codes

Potential Problems

- There is no underlying theory, so there is no way to know which ratios are most relevant
- Benchmarking is difficult for diversified firms
- Globalization and international competition makes comparison more difficult because of differences in accounting regulations
- Varying accounting procedures, i.e. FIFO vs. LIFO
- Different fiscal years
- Extraordinary events

Why Evaluate Financial Statements?

- Internal uses
  - Performance evaluation – compensation and comparison between divisions
  - Planning for the future – guide in estimating future cash flows
- External uses
  - Creditors
  - Suppliers
  - Customers
  - Stockholders

Accounting Manipulation

'So, do you still think the government should be run like a business?..'

Cash Flow Management

- Earnings can be manipulated using subjective decisions required under GAAP
- Total cash flow is more objective, but the underlying components may also be "managed"
  - Moving cash flow from the investing section to the operating section may make the firm's business appear more stable

Sarbanes-Oxley (SOX) Compliance Project

Discovery. Assessment. Remediation. Testing.

Big 5 Accounting Firm

Section 302:

Disclosure Certification by CEO & CFO

Accuracy and completeness of all statements in SEC 10K, and 10Q filings

Fair representation of financial position and result of operations

Evaluation of effectiveness of Disclosure Controls

Disclosure of significant events related to financial reporting and business operations

Section 404:

Management Assessment of Internal Controls

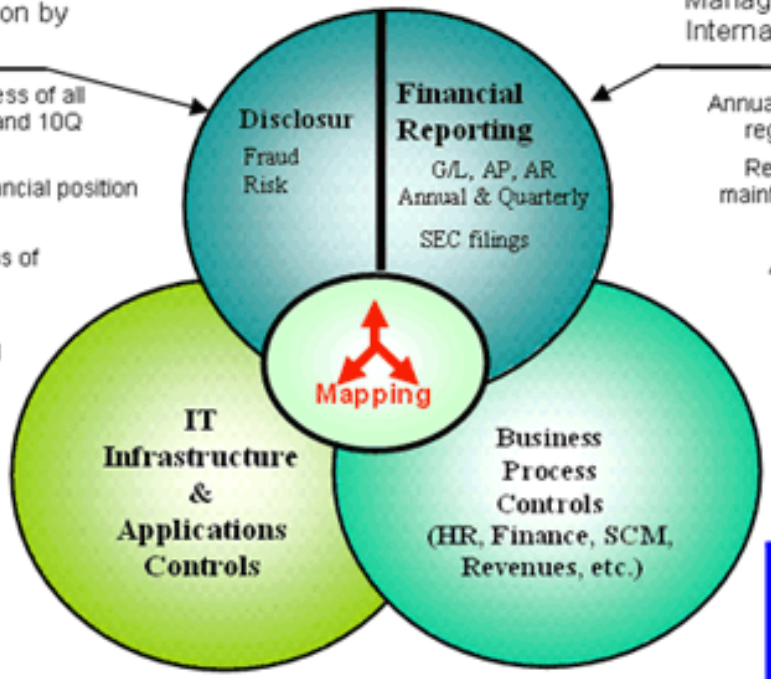
Annual assertion by the CEO & CFO regarding internal controls in 10K

Responsibility for establishing and maintaining internal control structure and procedures

Assessment of effectiveness of internal control structures and procedures

Attestation/Test by the external auditor

Disclosure of deficiencies in internal control to Audit Committee and external stakeholders



IT Team

Mgmt Team

Quick Quiz

- What is the difference between book value and market value? Which should we use for decision making purposes?
- What is the difference between accounting income and cash flow? Which do we need to use when making decisions?
- How do we determine a firm's cash flows? What are the equations, and where do we find the information?