15.516x Financial Accounting

Introduction to Course and to Accrual Accounting

John Core
MIT Sloan School of Management

Finance at MIT
Where ingenuity drives results

What are our course objectives?

We are training you to be leaders

- Understanding accounting at a big picture level will help you reach your career goals

Understand "**Big Picture**" of how accounting information is prepared

- NOT to train you to prepare it

Inform decisions using accounting information

- Introduce you to the rules, language, and techniques
- Help you recognize when judgment is being used
- Apply insights to real-world situations

MIT Sloan Mission

The mission of MIT Sloan is to develop principled, innovative leaders who improve the world

We will discuss examples in which firms/people manipulate accounting numbers

The purpose of these examples is to show the role of judgment in accounting systems

NOT to suggest the example behavior is appropriate

Introductory Case: Shrek 2 DVD from Dreamworks

MIT MANAGEMENT SLOAN SCHOOL

Economic Consequences of Accounting: Shrek 2

Case Facts (Wall Street Journal, May 31, 2005):

- "Shrek 2" DVD made a killing over the 2004/2005 holiday season
- At the beginning of 2005, DreamWorks put out a statement about the records it had broken in the DVD market
- As the first quarter ended, DreamWorks was shocked that retailers started returning millions of unsold copies of the DVD
- On May 10 2005, DreamWorks dropped a bombshell to the public when it disclosed that it fell short of earnings forecasts by 25%
- Timeline:

Nov/Dec	Jan	Feb	March	April	May
Made a killing	Statement about records we broke		First quarter ends March 31 Retailers returning millions of unsold copies of the DVD		Announce bad earnings

Economic Consequences of Accounting

- Do you think investors are concerned with the earnings shortfall? Why?
  - Investors have a mental model in which Price = E[earnings], where E[earnings] means discounted expected future earnings.
  - In your finance courses, you will learn that Price = E[cash flows]

    stock price is is the present value of discounted expected cash flows
- Does the accounting for the sales of Shrek 2 DVD's matter? Why?
  - Earnings help predict future cash flows
  - Earnings → future cash flows → price

Economic Consequences of Accounting

- What are the alternative approaches that can be used to account for the sale of a DVD?
  - Think about the value chain for a DVD:

    Make → Ship → Retailer sells it; sends money to Dreamworks (in 60-90 days)

    Retailer does not sell it; returns DVD to Dreamworks

    we could do our accounting at any one of those three places in the value chain.
  - Could account for sale in 3 places:

1. Make (build to order companies like Dell computer)
2. Ship — Accrual accounting; what Dreamworks does
3. Wait for retailer to send cash or return — Cash accounting

Economic Consequences of Accounting

trade-off here between relevance and reliability

- How do you think DreamWorks accounts for DVD sales and the related sales returns?
  - DreamWorks accounts for these when it ships the DVDs   Accrual accounting
  - This is more "relevant" – allows DreamWorks to get information to investors sooner
  - If it waited until the retailer sent cash, the accounting would be more "reliable"

    Cash accounting

- What information is being estimated, and what factors affect the accuracy of those estimates?
  - The main estimate is how many of the DVDs will be returned (not sold)
  - Using this estimate, DreamWorks can estimate sales and earnings
  - This estimate is more accurate when the market is stable, and the company has a longer history
  - There have been big changes in DVD market. Dreamworks is a new company, and only makes 2 movies / year.

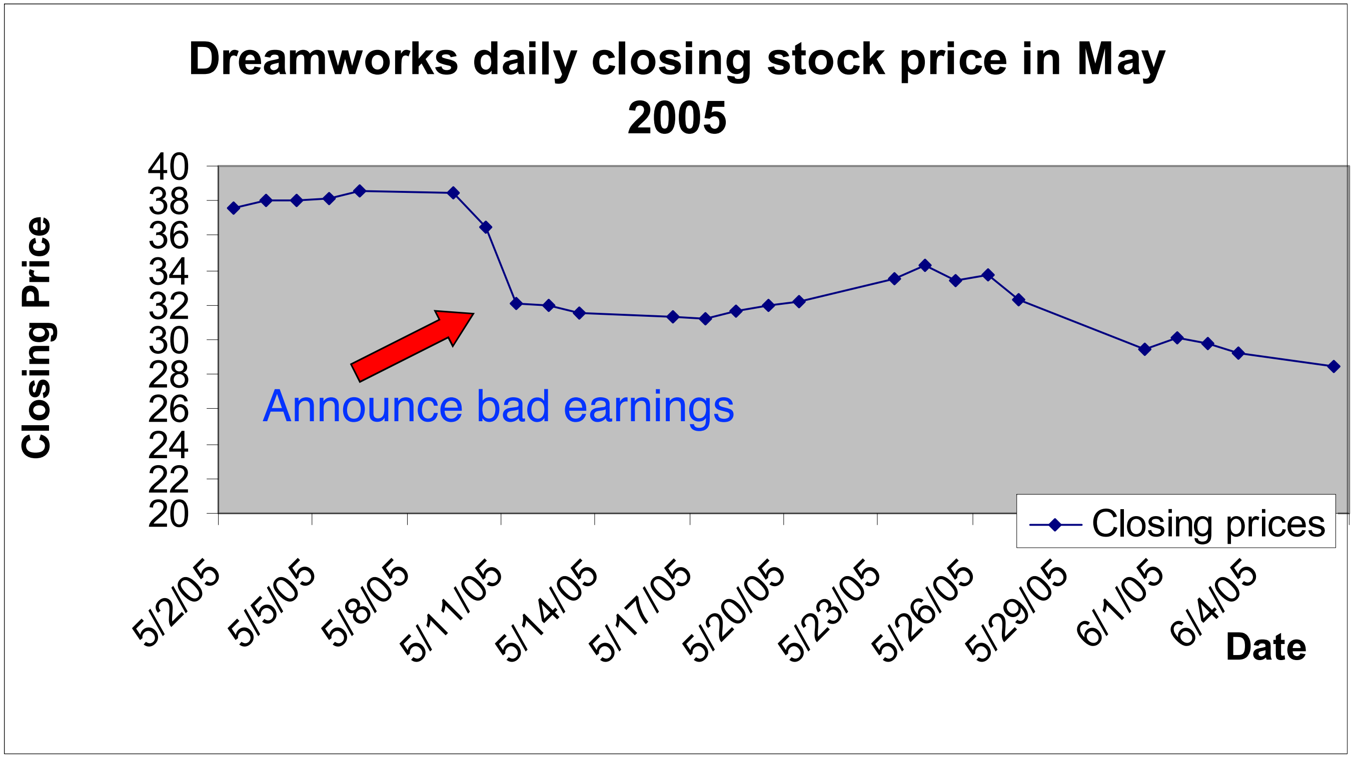
all those things cause us to make an inaccurate forecast.

Economic Consequences of Accounting

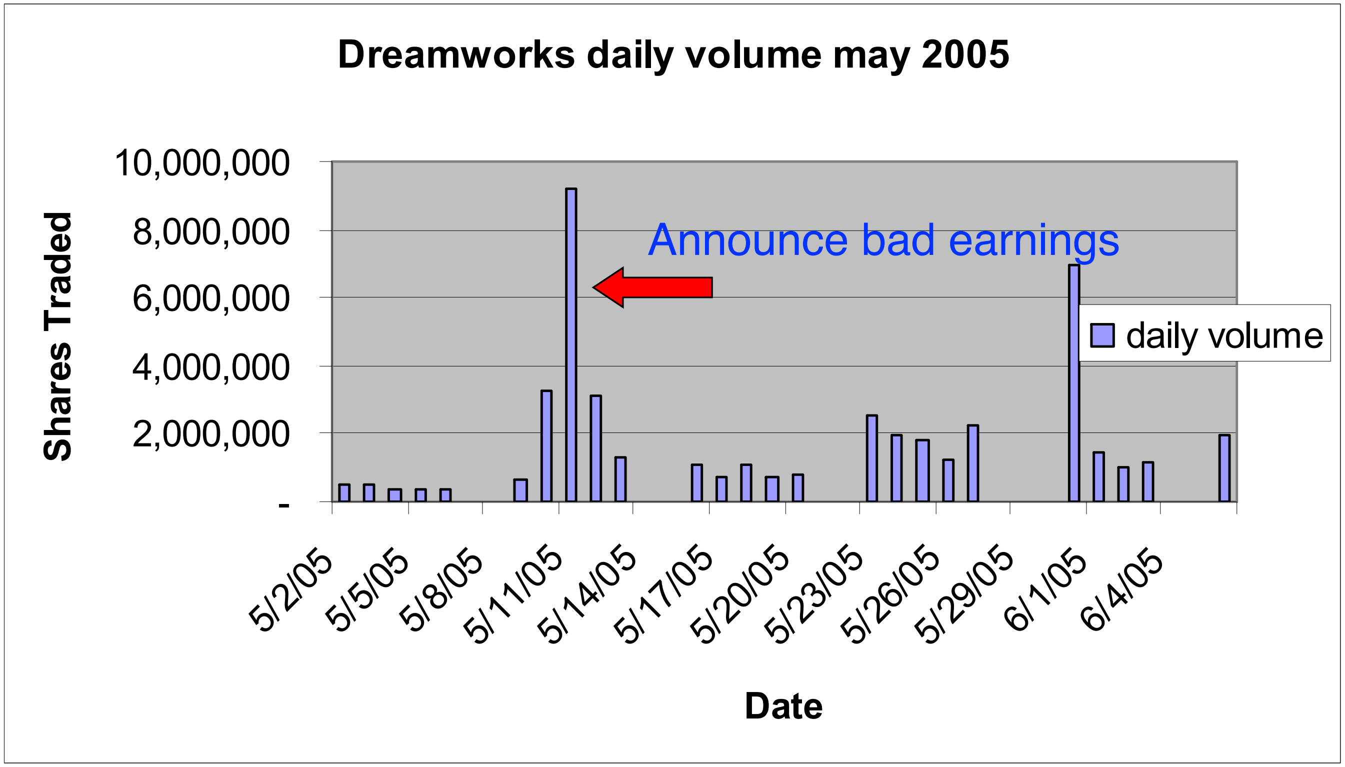
What are the consequences of Dreamwork's accounting choices?

- Earnings performance
- Stock price/volume/liquidity
- Potential lawsuits
- Managers' reputations
- Managers' compensation
- Job security
- etc.

The reaction of Dreamwork's stock to lower than expected earnings



The reaction of Dreamwork's stock to lower than expected earnings



Economic Consequences of Accounting

On May 10/11 when the market learns of DreamWorks earnings shortfall:

-13.9% return

9,200,000 shares traded

- Roughly 10% of the shares outstanding
- 5 times the normal share volume

A loss of $450,000,000 in market capitalization

Six subsequent shareholder lawsuits

Takeaways from DreamWorks

MIT MANAGEMENT SLOAN SCHOOL

The market considers earnings information to be important

Trade-off between relevance vs. reliability

Two types of accounting:

- Cash flows (when the cash comes in) reliable but not relevant
- Earnings (cash flows and accruals) relevant but less reliable

accruals are estimates of future cash flows

There are accounting rules and there is “accounting judgment”

The rules say that we can record revenue when we ship these DVDs.

- The rules allow DreamWorks to record revenue for DVD sales
- Management uses judgment to estimate how many DVDs will be returned

bad judgment lead to mistake and lawsuits

Agenda for remainder of this class

Introduce the balance sheet equation approach

like estimating expected returns in Shrek 2

- Way to analyze the effects of a transaction on firm's financial statements
- We will use the Balance Sheet Equation as our primary tool

Define some key concepts of Financial Accounting

Practice how to record transactions, and prepare financial statements

Introduce accrual accounting mechanics

Introduction to Accounting

Accounting is the process of conveying information to the firm's stakeholders

Who are the firm's stakeholders?

- Stockholders
- Creditors
- Suppliers
- Employees
- Customers
- Others

What types of information do stakeholders want? (Terminology)

What does the company own?

"Assets"

How much does the company owe?

"Liabilities"

How much do shareholders own?

"Shareholders' Equity"

How did the company perform?

"Net Income"

The Balance Sheet Equation ("BSE")

Assets	=	Liabilities	+	Shareholders' Equity
"own"		"owe"		"owners' share of the business"
				(book value, net worth, residual claim)

Analogy to personal net worth:

Assets	=	Liabilities	+	Shareholders' Equity
Your car		Loan balance		Net worth

Assets and Liabilities – Definitions

Assets:

1. Right of ownership
2. Associated with future benefits
3. Measurable with reasonable accuracy

accounting system doesn't think of benefits of investments in research and development as being measurable with reasonable accuracy. So we don't put any assets on our balance sheet having to do with R&D investments.

Liabilities:

1. Result of past transaction which incur the liability
2. Involves future obligation – cash, good or service
3. Measurable with reasonable accuracy

lawsuit is result of past transaction and involves future obligation, but not measurable, so it is not liability

Shareholders' Equity – Definition

Shareholders' Equity (SE = A – L)

Shareholders are the residual claimant to the firm's assets

We divide their rights (or investment) into:

(a) contributed capital, and

(b) retained earnings

- Contributed capital arises from the issuance of stock
- Retained Earnings are profits that have not been distributed as dividends

The Income Statement Equation

Net Income = Revenues – Expenses + Gains – Losses

Revenues are cash (or claims-to-cash) that are earned through the selling of goods or services

before Walmart gives us the cash, they've given us and accounts receivable, which is telling us that they owe us the money.

Expenses are the outflows of cash (or claims-to-cash) that are incurred to generate revenues

Gains are inflows of assets that are not generated through the ordinary course of business

if we sell a building and make a gain on it, our ordinary course of business is not selling buildings.

Losses are outflows of assets that are not generated through the ordinary course of business

The Income Statement Equation – simplified for now

Net Income = Revenues – Expenses ~~+ Gains – Losses~~

Revenues are cash (or claims-to-cash) that are earned through the selling of goods or services

Expenses are the outflows of cash (or claims-to-cash) that are incurred to generate revenues

~~Gains are inflows of assets that are *not* generated through the ordinary course of business~~

~~Losses are outflows of assets that are *not* generated through the ordinary course of business~~

Net Income and Shareholders' Equity

Remember shareholders' equity on balance sheet reflects:

(a) contributed capital and (b) retained earnings

retained earnings equation

Retained earnings changes as follows:

End. Ret. Earn. = Beg. Ret. Earn. + Net income – Dividends

ending beginning

- Recognizing revenues and expenses affect net income…
  - Revenues ultimately increase retained earnings
  - Expenses ultimately decrease retained earnings

The retained earnings equation links the balance sheet and the income statement together

Firm Performance and Shareholders' Equity

We can expand the Balance Sheet Equation to look like this:

Assets (A) = Liabilities (L) + Shareholders' Equity (S/E)

Cash + A/R + Inv. = A/P + Bonds + Contr. Capital + Ret. Earnings

Accounts Receivable Inventory

Revenues Increase Retained Earnings

Expenses Decrease Retained Earnings

Principles of Accrual Accounting

Accrual accounting attempts to measure ***firm performance*** in a particular period regardless of when cash is exchanged

Revenue Recognition Intuition:

once we send that DVD and once we know it's not going to be sent back to us, the earnings process is substantially complete.

- Earnings process substantially complete (Earned)
- Cash collection reasonably assured (Collectible)

Walmart's going to pay us. but John's Discount Shop is not assured.

Matching Principle for Expenses:

- Recognize expenses in same period as associated revenue

An accrual is the recognition of revenues and expenses, regardless of when cash is received start-up: zero init A, L, SE

Exercise: The Peters Company

Peters Company was in business for two years, during which it entered into the following transactions:

Year 1:

1. The owners contributed $24,000 cash
2. At the beginning of the year, rented a warehouse for two years with a prepaid rent payment of $12,000
3. Purchased $10,000 of inventory on account

   account payable: a promise that someday we'll pay the supplier $10,000
4. Sold half the inventory for $24,000, receiving $20,000 in cash and an account receivable of $4,000
5. Paid wages of $6,000. Accrued wages payable of $4,000

   We directly pay them in cash $6,000, and we owe them $4,000.

   a company pays you every two weeks, halfway in that two weeks, that company owes you money.
6. Entered into a contract with Julies Company to sell remaining inventory in Year 2. Received a cash advance of $6,000 from Julies Company
7. Paid dividend of $1,000

Year 2:

1. Shipped remaining inventory to Julies Company, received additional $24,000
2. Paid the outstanding balance for the inventory purchased in Year 1
3. Paid the outstanding wages balance
4. Received full payment on the outstanding accounts receivable
5. Incurred and paid wages of $12,000
6. Paid dividend of $9,000

every step and final state should obey BSE

Peters company, year 1

always keep track of cash first. it's always easy to see what happened to cash.

when in doubt, balance the transaction by putting the difference into retained earnings

prepaid wage: like prepaid rent

	Assets =				**Liabilities +**			**Stockholders Equity**		
	Cash	A/R	Prepd Rent (prepaid rent)	Inv	A/P	DefRev (deferred revenue)	WPay (wages payable)	Cont Cap (contributed capital)	R/E (retained earnings)	
1	24							24		
2	-12		12							
2A			- 6 prepaid rent gets used up: expense						- 6	Rent Exp expense
3				10	10					
4	20	4							24	Revenue
4A				-5					- 5	COGS cost of goods sold: expense of selling inventory
5	-6						4		- 10	Wage exp expense
6	6					6				
7	-1								-1	Dividend
EB	**31**	**4**	**6**	**5**	**10**	**6**	**4**	**24**	**2**	

Ending Balance

Total Assets = 46 = **Liabilities = 20** **S/E = 26**

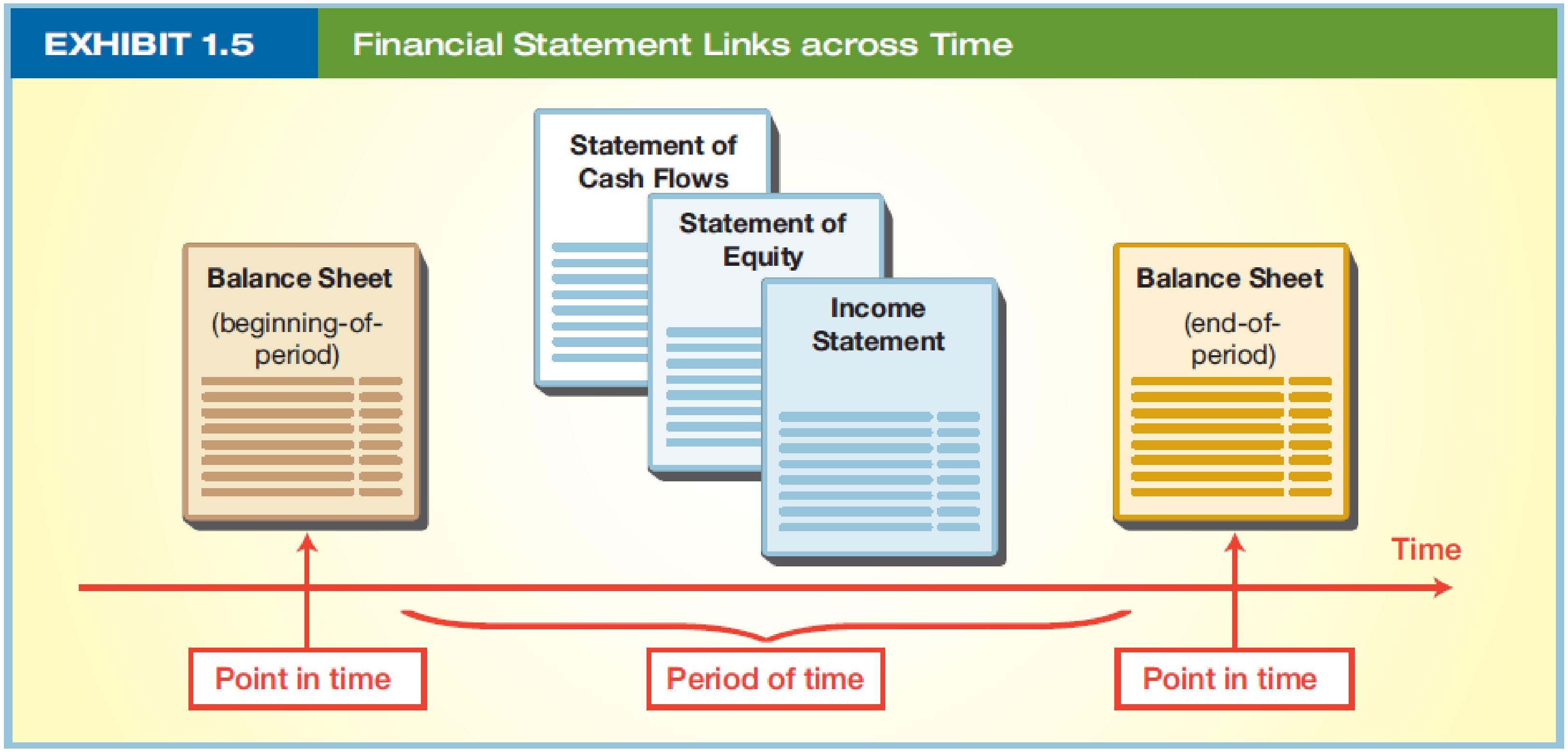
when we add all these columns down, We're going to have our balance sheet

because we haven't done the work, $6000 is not revenue. we owe Julie's company $6,000 worth of goods. when we deliver those $6,000 worth of goods to Julie's company next year, then our deferred revenue will become regular revenue

Balance Sheet (B/S), Year 1

	Assets		Liabilities	
most liquid asset	Cash	31	Accts Payable	10
	A/R	4	Def Rev	6
	Prepaid Rent	6	Wages Payable	4
least liquid asset	Inventory	5		
			Tot Liabilities	**20**
	Total Assets	**46**		
			Stockholders Equity	
			Cont. Capital	24
			Retained Earn	2
			Tot S/E	**26**

Financial Statement Links



So our income statement are going to be all the changes in retained earnings except for the dividend,

Peters company, year 1

	Assets =				Liabilities +			Stockholders Equity		
	Cash	A/R	Prepd Rent	Inv	A/P	DefRev	WPay	Cont Cap	R/E	
1	24							24	**Income Statement**	
2	-12		12							
2A			- 6						- 6	Rent Exp
3				10	10					
4	20	4							24	Revenue
4A				-5					- 5	COGS
5	-6						4		- 10	Wage exp
6	6					6				
7	-1								-1	Dividend
EB	**31**	**4**	**6**	**5**	**10**	**6**	**4**	**24**	**2**	

Dividends are NOT part of the Income Statement

Income Statement, Year 1 (Ignoring Taxes)

Revenue		24
Cost of Goods Sold		-5
Gross Margin		**19**
Less Operating Expenses		
Rent	-6	
Wage Expense	-10	
Total Operating expenses		**-16**
Net Income		**3**

Statement of Cash flows

There is a third financial statement that firms are required to prepare – the statement of cash flows (SCF)

The statement reports the change from beginning of the period cash and end of the period cash

There are three types of cash flows: (Discussed in a later class)

- operating
- investing
- financing

Peters company, year 1

	Cash Flow Statement		Assets =			Liabilities +			Stockholders Equity		
	Cash		A/R	Prepd Rent	Inv	A/P	DefRev	WPay	Cont Cap	R/E	
1	24	Stock issue							24		
2	-12	Prepaid rent		12							
2A				- 6						- 6	Rent Exp
3					10	10					
4	20	Rev								24	Revenue
4A					-5					- 5	COGS
5	-6	Wages						4		- 10	Wage exp
6	6	Def Rev					6				
7	-1	Div								-1	Dividend
EB	**31**		**4**	**6**	**5**	**10**	**6**	**4**	**24**	**2**	

Statement of Cash Flows (SCF), Year 1

Beginning Cash		0
Cash Flow from Operations		
Cash rec. from cust. customers	26	
Less rent paid	-12	
Less wages paid	-6	
Total CFO		**8**
Cash from Investing (CFI)		**0**
Cash from investment would be like if we bought a building		
Cash From Financing		
Cash from stock sale	24	
Dividend	-1	
Total CFF		**23**
Ending Cash		31

Summary of year 1

Performance Measure	Year 1	Year 2	Total
Net Income	3		
Minus: Cash Flow from Operations (CFO)	8		
Accruals	-5		

Accruals = Net Income – CFO

Concluding remarks

Finance at MIT
Where ingenuity drives results

Aside: Debits, credits, and journal entries
(Not on exam)

The BSE for “The owners contributed $24,000 cash” is:

Assets =				Liabilities +			Stockholders Equity	
Cash	A/R	Prepd Rent	Inv	A/P	DefRev	WPay	Cont Cap	R/E
24,000							24,000	

Historically, accountants have used a journal entry system with debits and credits.

The journal entry for “The owners contributed $24,000 cash” is:

	Debit	Credit
Cash	24,000	
Contributed capital		24,000

Take Away Slide

We first discussed some basic accounting definitions

Introduced the three fundamental accounting equations:

- BSE,
- Net Income equation,
- and RE equation.

Accrual accounting measures performance, regardless of when cash is affected

Use the BSE as a tool to analyze the impact of transactions on financial statements

At this point, you should

- be able to identify assets, liabilities and shareholders equity items
- be comfortable with accrual accounting and entering balance sheet equation entries

Accrual accounting: revenue can be recognized at same time, before, or after cash is collected

	Current Period	Subsequent Period
Cash received ***concurrent with*** earning revenue	Asset = Liab + S/E Cash = Ret Earn + +	
Cash received ***before*** earning revenue	Asset = Liab + S/E Cash = Def Rev + +	Asset = Liab + S/E Cash = Def Rev + Ret Earn – +
Cash received ***after*** earning revenue	Asset = Liab + S/E Acct Rec = Ret Earn + +	Asset = S/E Cash + Acct Rec = Ret Earn + –

Revenue Recognition Intuition: Recognize revenues when…

- Earnings process substantially complete (Earned)
- Cash collection reasonably assured (Collectible)

Accrual accounting: <u>expense</u> can be recognized at same time, before, or after cash is collected

	Current Period	Subsequent Period
Cash paid ***concurrent with*** using resource to generate revenue	Asset = Liab + S/E Cash = Ret Earn – –	
Cash paid ***before*** using resource to generate revenue Wages paid in advance	Asset = Liab + S/E Cash + Prepaid Asset – +	Asset = Liab + S/E Prepaid Asset = Ret Earn – –
Cash paid ***after*** using resource to generate revenue Wages Accrued but not Paid	Asset = Liab + S/E Cash = Payable + Ret Earn + –	Asset = Liab + S/E Cash = Payable + Ret Earn – –

Matching Principle: Recognize expenses earnings when…

- Matched to the same period as the associated revenue