MIT Sloan School of Management
15.501 Corporate Financial Accounting
Midterm Examination 2
November 17, 2010

NAME: Michael Plasneta

SECTION that you ATTEND REGULARLY: (Circle one)

[A] (1:00pm-2:30pm) or **[B] (2:30pm-4:00pm)**

Instructions:

1) NO QUESTIONS. When in doubt, state your assumptions.
2) Exam Length: 1 hour and 20 minutes
3) This exam is 15 pages long: 1 cover page, 11 question pages, and 3 pages of tables. Please make sure your copy of the exam is not missing any pages.
4) The last three pages can be detached.
5) A non-programmable calculator may be used during this exam. No other material is to be used during the exam.
6) Write your answers in the space provided *and show any supporting computations you make*. Do not attach additional material.
7) The total number of points on this exam is 100.
8) Refer to Instruction #1 when you feel the need to ask a question.

Manage your time efficiently.

Make sure to look through the entire exam before you start!

Question	Possible Points	Actual Points
1	18	10
2	12	10.5
3	12	10
4	16	14.5
5	24	16.5
6	18	13.5

75 Class avg 68

Question 1 (18 points)

Required: Circle the letter corresponding to your response.

1. On December 30, Year 1, Peter Griffin Corporation received merchandise costing $1,000 and counted it in the December 31 listing of all items on hand. The firm included the cost of the inventory in its ending inventory on the balance sheet on December 31, Year 1. The firm received an invoice on January 2, Year 2 and recorded the amount as a Year 2 acquisition. The firm uses a periodic inventory system. Assume that the firm never discovered its error. What is the effect on the Year 2 ending inventory?

A) None.
B) Overstated by $1,000.
C) Understated by $1,000.
D) Insufficient Information for Calculation.

2. The following hammers were available for sale during the year for Lois Tools:

Beginning inventory	10 units at $40
First purchase	15 units at $55
Second purchase	30 units at $70
Third purchase	25 units at $65

Wilkins has 30 hammers on hand at the end of the year. What is the dollar amount of cost of goods sold for the year according to the first-in, first-out method?

A) $1,975
B) $2,975
C) $1,575
D) $1,950

3. Brian Company's 2011 balance sheet reveals that inventories reported on a LIFO basis are $5,620 million. In a footnote, management stated that the LIFO reserve was $944 million. What is the total cumulative tax effect of using LIFO given a 35% income tax rate?

A) $4,676 million
B) $1,967 million
C) $1,635.9 million
D) $944 million
E) $330.4 million

4. Stewie Company purchased a tractor at a cost of $60,000. The tractor has an estimated residual value of $10,000 and an estimated life of 8 years, or 12,000 hours of operation. The tractor was purchased on January 1, 2010 and was used 2,400 hours in 2010 and 2,200 hours in 2011. What method of depreciation will produce the *maximum* depreciation expense in 2010?

A) Straight-line
B) Units-of-production
C) Double-declining-balance
D) All methods produce the same expense in 2010

can assume

land never (remaining hours?, if so B

5. Meg Industries provides the following information relating to its land, buildings and equipment:

000's	2011
Land	$ 135
Buildings	460
Machinery and equipment	7,340
	$7,935
Total accumulated depreciation	$5,300

straight line?

already

Reported depreciation expense is $520 million for 2011. Calculate the plant assets' estimated useful life.

per year

A) 30 years
B) 29.32 years
C) 27.55 years
D) 15.26 years
E) 15 years

15.26 10.19 years in

6. On January 1, 2010, Chris Corporation issued 100 2-year bonds with face value of $500 per bond and semi-annual coupon payments of $25 per bond. At the time of bond issuance, the market interest rate is 10%. There are no other transactions during the period. What is the ending cash balance of Chris Corporation at the end of year 1, assuming the beginning balance of cash was $0?

A) $50,000.
B) $48,865.
C) $45,000.
D) $37,075.
E) Insufficient information for calculation.

500 · .82645 + 1,73554 · 50
413,225 + 86,77
500,000 gain
− first 2 coupons
−50
450 · 100

7. What effects would the accrual of $50 of interest on a note payable have on financial statements?

I. Balance sheet: Liabilities are decreased by $50
II. Income statement: Expenses are increased by $50
III. Balance sheet: Retained earnings are decreased by $50
IV. Balance sheet: Cash assets are decreased by $50
V. Balance sheet: Liabilities are increased by $50

principle

A) I, II and III
B) II, III and V
C) II, IV and V
D) II, III and IV
E) IV and V

8. Operating leases differ from capital leases in that

A) For a capital lease the lessee records the lease payments as rent expense, but for an operating lease the lessee reports the lease payments as depreciation expense.
B) For an operating lease the lessee depreciates the asset acquired under lease, but for the capital lease the lessee does not.
C) Operating leases create a long-term liability on the balance sheet, but capital leases do not.
D) Operating lease payments are generally greater than capital lease payments. same
E) Operating leases do not transfer ownership of the asset under the lease, but capital leases often do.

9. Why did people view stock splits as a good thing?

A) Firms received a tax benefit from more shares outstanding.
B) Managers believed their shares are undervalued and issue more shares.
C) Managers believed their shares are overvalued and issue more shares.
D) The liquidity of the stock increased.
E) There was an optimal price per shares that minimizes transaction costs.

only past item

Question 2 (12 points) Inventory

Two companies, the Lastin Company and the Firstin Company, are in the scrap metal warehousing business as arch competitors. They are about the same size, and in 20X1, coincidentally encountered seemingly identical operating situations. Only their inventory accounting systems differed. Lastin uses LIFO, and Firstin uses FIFO.

For both companies, the beginning inventory was 10,000 tons; it costs $50 per ton. During the year, each company purchased 50,000 tons at the following prices:

30,000 @ $60 on March 17
20,000 @ $70 on October 5

Each company sold 45,000 tons at average prices of $100 per ton. Other expenses in addition to cost of goods sold, but excluding income taxes, were $600,000. The income tax rate is 40%.

A. Compute the net income for the year for both companies. Show your calculations.

FIFO

Jan 1 10,000 · 50] sold
Mar 17 30,000 · 60]
Oct 5 20,000 · 70] left

COGS/sold 10,000 · 50 + 30,000 · 60 + 5,000 · 70
= 500,000 + 1,800,000 + 35000
= 2,303,500 -½

ending inventory/left 15,000 · 70 = 1,050,000

Revenue 45,000 · 100 = 4,500,000

Net income before taxes 4,500,000 − 2,303,500 − 600,000 =
1,596,500

Taxes Payable 1,596,500 · .4 = 638,600

Net income 1,596,500 − 638,600
= 957,900

LIFO

Jan 1 10,000 · 50] left
Mar 17 30,000 · 60]
Oct 5 20,000 · 70] sold

COGS 20,000 · 70 + 25,000 · 60
1,400,000 + 1,500,000
2,900,000

ending inventory 5,000 · 60 + 10,000 · 50
300,000 + 500,000 =
800,000

revenue 45,000 · 100 = 4,500,000

Net income before taxes 4,500,000 − 2,900,000 − 600,000 =
1,000,000

Taxes Payable 1,000,000 · .4 = 400,000

Net income = 1,000,000 − 400,000 = 600,000

B. What are the days in inventory for Lastin and Firstin?

B)

$$\frac{365}{\text{inventory turnover}} = \frac{\text{COGS}}{\text{avg inventory}}$$

$$\frac{365}{\left(\frac{2,303,500}{\frac{1,050,000}{2}}\right)} = 83.33$$

5

4.38

$$\frac{365}{\left(\frac{2,900,000}{\frac{800,000}{2}}\right)} = 50.34$$

7.25

don't really remember

Question 3 (12 points) Property, Plant and Equipment

Required: Write your answer in the space below:

Botwin Corporation has decided to invest in the hydroponic plant growing business. To do so, they must secure a production facility and purchase equipment. The CEO of the Corporation, Nancy, has decided that she needs to build her own custom-made production facility. During the year, she spends $500,000 for building materials, $300,000 to architects and laborers, fees related to zoning and inspection for $50,000, and accrued interest payable equal to 10% on a $1.5 million construction loan, which was secured on January 1, 2010. The building was finally finished on September 31, 2010. On October 1, Nancy applies and receives approval for a 5-year, $100,000 loan that she can use to purchase her equipment. The interest rate of the loan is 5%. Nancy uses the second loan to purchase the following equipment by October 30, 2010: $10,000 in grow lights, $20,000 in exhaust blowers, $50,000 in air filters, and $10,000 in pots.

assuming these last more than 1 year

(a) Nancy wants to know, what amount of property, plant and equipment is capitalized on the balance sheet on December 31, 2010?

500,000 materials
300,000 labor
50,000 fees
~~150,000~~ financing
1,000,000 ½ = 500,000

\+

10,000
20,000
50,000
10,000
90,000

= 1,090,000

(b) The building is estimated to last for 20 years and Nancy decides to use straight-line depreciation and estimate that her yearly depreciation expense is $45,000. Nancy decides that double-declining balance method is a better way to calculate depreciation expense for the equipment, which are only expected to last 5 years and the salvage value is $0. What is the depreciation expense reported on December 31, 2010? ← first year

$\frac{90,000 - 0}{5} = 18,000 \times 2 = 36000$

ah! must pro-rate!!! ← haha.. yes!

building 3 months
equipment 2 months

$45000 \cdot \frac{3}{12} + 36,000 \cdot \frac{2}{12}$

11,250 + 6,000

(17,250)

net building

(c) Nancy's business ventures are not as profitable as she had hoped. On June 30, 2011, Nancy sells all of her equipment to Guillermo Garcia for $80,000. What are the journal entries on Nancy's book on this day?

last qv → 90K.

So what is depreciation $6{,}000 + \frac{36000 - 6{,}000}{5} \cdot 2 \cdot \frac{6}{12}$

$6{,}000 + 6{,}000 = 12{,}000$

Value $90{,}000 - 12{,}000 = 78{,}000$

Gain on sale $80{,}000 - 78{,}000$

		Cash	+ Assets	= Liabilities	+ Contrib Capital	+ RE
6/30/2011	Sale equipment	+80,000	−78000			+2,000 gain on asset sale

MEMO −1.5

(d) On October 30, 2011, Nancy receives an offer from Esteban Reyes to purchase the building for $1.5 million. She accepts his offer. What are the associated journal entries?

assume w/o selling the land under it

So what is depreciation? $11{,}250 + 45{,}000 \cdot \frac{10}{12}$

$11{,}250 + 37{,}500 = 48{,}750$ ✓

Current value $1{,}000{,}000 - 48{,}750 = 951{,}250$

Gain on sale $1{,}500{,}000 - 951{,}250 = 548{,}750$

		Cash	+ Assets	= Liabilities	+ Contrib. C.	+ RE
10/30/14	Sale Building	+1,500,000	−951,250			+548,750 gain on asset sale

✓

Question 4 (16 points) Bonds

Required: Write your answer in the space below.

On December 31, 2009, Veridian Corporation issued $20 million of 4-year, 10% ~~debentures~~ bonds. The market interest rate at issuance was 8%. On December 31, 2010 (after all interest payments and amortization had been recorded for 2010), the company purchased all the debentures for $19 million. Throughout their life, the debentures had been held by a large insurance company.

1. Compute the gain or loss on early extinguishment.

So Sale value = PV(20 million, 4 years, 8%) + PVOA(8%, 4 years) · 10% coupon · FV

.73503 · 20,000,000 + 3.31213 · .1 · 20,000,000

14,700,600 + 6,624,260

21,324,860

Value on Dec 31 = PV(20 million, 3 years, 8%) + PVOA(8% 3 years) · 10% coupon · FV

.79383 · 20,000,000 + 2.57710 · .1 · 20,000,000

15,876,600 + 5,154,200

21,030,800 value

Gain = 21,030,800 − 19,000,000

2,030,800 ✓

2. What are the journal entries recorded on December 31, 2010?

	Cash	+ Assets	= Liabilities	+ Contrib	+ RE
Repurchase Bonds	−19,000,000	+21,030,800			+2,030,800

Prem Bonds 1,030,800 2mid −1½

Assuming the following entries already occured

Pay interest −2,000,000

Bond Premium −294,011

NBP 21,030,849

bond Premium

checks out ✓

−1705988 Interest

Question 5 (24 points) Leases

Bluth Frozen Banana Company is interested in leasing a machine and has identified the following possible lease that it may acquire.

	Lease
Lease term (nonrenewable)	5 years
Estimated Useful Life of Asset	5 years
Interest rate implicit in lease	10%
Annual end of year lease payments	$150,000
Salvage Value of Asset	$0

must be Capital

Prior to making this decision and without the lease information, Bluth Frozen Banana Company has the follow amounts:

- Cash: $1,000,000
- Accounts Receivable: $250,000
- Inventories: $500,000
- Accounts Payable: $900,000
- Wages Payable: $100,000
- Income before lease expenses: $350,000
- Income tax rate 35%

150,000 × 5 = 750,000

Prepare an independent analyses that includes the *assets* and *liabilities* sections of the *balance sheet* and an *income statement*, as well as a comparison of *return on asset* and *return on equity ratios* for Bluth Frozen Banana Company under 2 scenarios: with lease (for only the first year of leasing) or without lease. Assume equity is $750,000 before considering the leases and $700,000 when considering the leases.

? Why different? Assumption

Or full balance sheet

Indicate your solution in the space provided below:

Balance Sheet

	With Lease	Without Lease
Assets		
Cash	~~1000,000~~	1,000,600
Accounts Recievable	750,000	250,600
Inventories	500,000	500,000
Total Current Assets	1,750,000	1,750,000
Total	~~750,000~~ 2,500,000	0 1,750,000
Liabilities		
Accounts Payable	900,000	900,000
Wages Payable	100,000	100,000
Total Current	1,000,000	1,000,000
Lease Payments	~~750,000~~	0
Total	1,750,000	1,000,000

Income Statement

	With Lease	Without Lease
Income before lease expenses	350,000	350,000
Lease expenses	~~150,000~~	0
Net income before taxes	500,000	350,000
~~Taxes payable~~	175,000	122,500
Net income	325,000	227,500

ROA — revenue / assets, or income before tax + depreciation

With Lease	Without Lease
~~350,000~~ / 2,500,000 = ,14	~~350,000~~ / 1,750,000 = ,2

ROE — revenue / equity, or income before tax + depreciation

With Lease	Without Lease
350,000 / 700,000 = ,5	~~350,000~~ / 750,000 = ,46̄

Question 6 (18 points) Stockholders' Equity

Part A:

Pritchett Company had the following transactions during 2011:

Year 1: Pritchett Company sells 20,000 shares of its no-par common stock for $15.
Year 2: Pritchett Company buys 2,000 shares of its no-par common stock for $12 per share.
Year 3: Pritchett Company declares and pays a dividend on its no-par common stock of $3 per share. The company's basic earnings per share were $8 in the third year. Cash
Year 4: Pritchett Company declares and pays a stock dividend on its no-par common stock of $2 per share. The company's basic earnings per share were $9 in the fourth year.
Year 5: Pritchett Company purchases 1,000 shares of available for sale securities on January 1, Year 5, for $50 per share. By December 31, the available for sale security has increased to $55 per share.

Indicate the effect (increase, decrease, no effect) of each of these stock decisions for each year on the items listed below. — means no effect

Year	Total Assets	Total Liabilities	Total Equity	EPS	Operating Income
1	↑ Cash	—	↑	↓	—
2	~~↓~~	—	~~↓~~	↑	—
3	↓	—	↓ Dividend	~~↓~~ NE	—
4	~~↓~~ NE	—	~~↓~~ Dividend NE	↓	—
5	↑ gain on asset value	—	~~↑~~	~~↑~~ NE	—

→ does not include treasury stock purchases, dividends

$\frac{3}{8}$ vs $\frac{2}{9}$

-3.5

Very unsure on this one

Part B (Unrelated to Part A): So why is it the same problem? Stockholders' Equity!

On June 24, 2010, Waldorf Fashion Company announced that the board of directors has authorized payment of a regular quarterly cash dividend of $0.15 per common share. The quarterly dividend is payable on October 26, 2010, to shareholders of record as of the close of business on October 5, 2010. What are the relevant journal entries for the events on June 24, October 5, and October 26? Assume the number of shares outstanding as of May 31st is 400,000,000.

	Cash + Assets	= Liabilities	+ Contrib C +	Earned Capital
June 24		~~60,000,000~~ Dividend Payable		−60,000,000 Dividend
Oct 5	No journal entry			
Oct 26	−60,000,000 Pay dividend payable	~~60,000,000~~ Dividend Payable		

400,000,000 · .15 = 60,000,000

Calculator overflows w/ large int

You should use journal entries! Here & Q4.

Done w/ 10 min left

MIT Sloan School of Management
15.501 Corporate Financial Accounting
Midterm Examination 2
November 17, 2010

NAME: Suggested Solution

SECTION that you ATTEND REGULARLY: (Circle one)

[A] (1:00pm-2:30pm) or **[B] (2:30pm-4:00pm)**

Instructions:

1) NO QUESTIONS. When in doubt, state your assumptions.
2) Exam Length: 1 hour and 20 minutes
3) This exam is 15 pages long: 1 cover page, 11 question pages, and 3 pages of tables. Please make sure your copy of the exam is not missing any pages.
4) The last three pages can be detached.
5) A non-programmable calculator may be used during this exam. No other material is to be used during the exam.
6) Write your answers in the space provided *and show any supporting computations you make*. Do not attach additional material.
7) The total number of points on this exam is 100.
8) Refer to Instruction #1 when you feel the need to ask a question.

Manage your time efficiently.

Make sure to look through the entire exam before you start!

Question	Possible Points	Actual Points
1	18	
2	12	
3	12	
4	16	
5	24	
6	18	

Question 1 (18 points)

Required: Circle the letter corresponding to your response.

1. On December 30, Year 1, Peter Griffin Corporation received merchandise costing $1,000 and counted it in the December 31 listing of all items on hand. The firm included the cost of the inventory in its ending inventory on the balance sheet on December 31, Year 1. The firm received an invoice on January 2, Year 2 and recorded the amount as a Year 2 acquisition. The firm uses a periodic inventory system. Assume that the firm never discovered its error. What is the effect on the Year 2 ending inventory?

A) None.
B) Overstated by $1,000.
C) Understated by $1,000.
D) Insufficient Information for Calculation.

Calculation:
The firm uses periodic inventory system and the error was not discovered. That means at the end of Year 2, an inventory count has taken place indicating the correct number of inventory on December 31st. The cost of goods sold in Year 2 was overstated by $1,000.

2. The following hammers were available for sale during the year for Lois Tools:

Beginning inventory	10 units at $40
First purchase	15 units at $55
Second purchase	30 units at $70
Third purchase	25 units at $65

Wilkins has 30 hammers on hand at the end of the year. What is the dollar amount of cost of goods sold for the year according to the first-in, first-out method?

A) $1,975
B) $2,975
C) $1,575
D) $1,950

Calculation:
(10 + 15 + 30 + 25 units) – 30 units = 50 units sold.
Cost of goods sold = (10 units × $40) + (15 units × $55) + (25 units × $70) = $2,975

3. Brian Company's 2011 balance sheet reveals that inventories reported on a LIFO basis are $5,620 million. In a footnote, management stated that the LIFO reserve was $944 million. What is the total cumulative tax effect of using LIFO given a 35% income tax rate?

A) $4,676 million
B) $1,967 million
C) $1,635.9 million
D) $944 million
E) $330.4 million

Calculation:
Using LIFO has decreased pre-tax profits by $944 due to higher cost of goods sold. Decrease in income taxes: $944 million × 35% = $330,400,000

4. Stewie Company purchased a tractor at a cost of $60,000. The tractor has an estimated residual value of $10,000 and an estimated life of 8 years, or 12,000 hours of operation. The tractor was purchased on January 1, 2010 and was used 2,400 hours in 2010 and 2,200 hours in 2011. What method of depreciation will produce the *maximum* depreciation expense in 2010?

A) Straight-line
B) Units-of-production
C) Double-declining-balance
D) All methods produce the same expense in 2010

Calculation:
See pages 356-358 of the book for further details.
Straight-line: ($60,000 - $10,000) / 8 = $6,250 per year
Double-declining balance: $60,000 × (1/8 × 2) = $15,000 for 2010
Units of production: ($60,000 - $10,000) × (2,400 hours / 12,000 hours) = $10,000 for 2010

5. Meg Industries provides the following information relating to its land, buildings and equipment:

millions	2011
Land	$ 135
Buildings	460
Machinery and equipment	7,340
	$7,935
Total accumulated depreciation	$5,300

Reported depreciation expense is $520 million for 2011. Calculate the plant assets' estimated useful life.

A) 30 years
B) 29.32 years
C) 27.55 years
D) 15.26 years
E) 15 years

Calculation:
Land is not depreciated for MAJORITY of firms. We made the assumption that the salvage value is $0 here. Plant assets useful life = Cost of depreciable assets/Depreciation expense = ($7,935 - $135) / $520 = 15 years.

6. On January 1, 2010, Chris Corporation issued 100 2-year bonds with face value of $500 per bond and semi-annual coupon payments of $25 per bond. At the time of bond issuance, the market interest rate is 10%. There are no other transactions during the period. What is the ending cash balance of Chris Corporation at the end of year 1, assuming the beginning balance of cash was $0?

A) $50,000.
B) $48,865.
C) $45,000.
D) $37,075.
E) Insufficient information for calculation.

Calculation:
The semi-annual coupon payment is $25 per bond, which means the annual coupon payment is $50 per bond. This indicates that the state interest rate is 10%, which is the same as the market interest rate. Hence, this is a bond issued at par. At the time of issuance, on January 1st, ABC receives $50,000 in cash. On June 30th and December 30th, ABC paid $2,500 and $2,500 in coupon payments. Hence, the ending balance is $50,000-$2,500*2=$45,000.

7. What effects would the accrual of $50 of interest on a note payable have on financial statements?

I. Balance sheet: Liabilities are decreased by $50
II. Income statement: Expenses are increased by $50
III. Balance sheet: Retained earnings are decreased by $50
IV. Balance sheet: Cash assets are decreased by $50
V. Balance sheet: Liabilities are increased by $50

A) I, II and III
B) II, III and V
C) II, IV and V
D) II, III and IV
E) IV and V

Calculation:
Interest is recorded on the balance sheet as an accrued liability, increasing liabilities by $50, decreasing retained earnings by $50, and adding $50 to expenses on the income statement. Since no cash is spent to pay the note or the interest, cash assets are not affected.

8. Operating leases differ from capital leases in that
A) For a capital lease the lessee records the lease payments as rent expense, but for an operating lease the lessee reports the lease payments as depreciation expense.
B) For an operating lease the lessee depreciates the asset acquired under lease, but for the capital lease the lessee does not.
C) Operating leases create a long-term liability on the balance sheet, but capital leases do not.
D) Operating lease payments are generally greater than capital lease payments.
E) Operating leases do not transfer ownership of the asset under the lease, but capital leases often do.

Calculation:
One of the 4 criteria of capital rather than operating leases (page 440 of the book) is that (1) the lease automatically transfers ownership of the lease asset to the lessee at the lease-end. Operating leases never have ownership transfer. Capital lease can and often do.

9. Why did people view stock splits as a good thing?
A) Firms received a tax benefit from more shares outstanding.
B) Managers believed their shares are undervalued and issue more shares.
C) Managers believed their shares are overvalued and issue more shares.
D) The liquidity of the stock increased.
E) There was an optimal price per shares that minimizes transaction costs.

This was explained to you by Prof. Watts during 2 classes.

Question 2 (12 points) Inventory

Two companies, the Lastin Company and the Firstin Company, are in the scrap metal warehousing business as arch competitors. They are about the same size, and in 20X1, coincidentally encountered seemingly identical operating situations. Only their inventory accounting systems differed. Lastin uses LIFO, and Firstin uses FIFO.

For both companies, the beginning inventory was 10,000 tons; it costs $50 per ton. During the year, each company purchased 50,000 tons at the following prices:

30,000 @ $60 on March 17
20,000 @ $70 on October 5

Each company sold 45,000 tons at average prices of $100 per ton. Other expenses in addition to cost of goods sold, but excluding income taxes, were $600,000. The income tax rate is 40%.

A. Compute the net income for the year for both companies. Show your calculations.

Suggested Solution

In '000	LIFO	FIFO
Inventory	10*$50+5 *$60=$800	15*$70=$1,050
COGS	20*$70+25*$60=$2,900	10*$50+30*$60+5*$70=$2,650

In '000	LIFO	FIFO
Revenue	$4,500 = 45*$100	$4,500 = 45*$100
COGS	($2,900)	($2,650)
Gross Margin	$1,600	$1,850
Expenses	($600)	($600)
Earnings before Taxes	$1,000	$1,250
Income Taxes @ 40%	($400)	($500)
Net Income	$600	$750

B. What are the days in inventory for Lastin and Firstin?

Suggested Solution

Days in Inventory = 365/Inventory Turnover
Inventory Turnover = COGS / Average Inventory

In '000	LIFO	FIFO
Average Inventory	0.5(10*$50 + $800) = $650	0.5(10*$50 + $1,050) = $775
COGS	20*$70+25*$60=$2,900	10*$50+30*$60+5*$70=$2,650
Inventory Turnover	$2,900K/$650K = 4.46	$2,650K/$775K = 3.42
Days in Inventory	365*$650K/$2,900K = 81.81	365*$775K/$2650K = 106.75

Question 3 (12 points) Property, Plant and Equipment

Required: Write your answer in the space below:

Botwin Corporation has decided to invest in the hydroponic plant growing business. To do so, they must secure a production facility and purchase equipment. The CEO of the Corporation, Nancy, has decided that she needs to build her own custom-made production facility. During the year, she spends $500,000 for building materials, $300,000 to architects and laborers, fees related to zoning and inspection for $50,000, and accrued interest payable equal to 10% on a $1.5 million construction loan, which was secured on January 1, 2010. The building was finally finished on September 30, 2010. On October 1, Nancy applies and receives approval for a 5-year, $100,000 loan that she can use to purchase her equipment. The interest rate of the loan is 5%. Nancy uses the second loan to purchase the following equipment by October 31, 2010: $10,000 in grow lights, $20,000 in exhaust blowers, $50,000 in air filters, and $10,000 in pots.

(a) Nancy wants to know, what amount of property, plant and equipment is capitalized on the balance sheet on December 31, 2010?

Suggested Solution:
Since the building is considered as a self-constructed asset, "a portion of the interest expense incurred during the construction period should [...] be capitalized as part of the asset's cost" (page 354 of book). Interest capitalization period lasts for a maximum of 9 months (from Jan 1, 2010 to Sept 30, 2010).
Building (Property): $500,000 + $300,000 + $50,000 + 0.10*$1,500,000*(9/12) = $962,500

Since the equipments are purchased assets, any interest accrued is NOT capitalized.
Equipment: $10,000 + $20,000 + $50,000 + $10,000 = $90,000

Total PP&E: $962,500 + $90,000 = $1,052,500

(b) The building is estimated to last for 20 years and Nancy decides to use straight-line depreciation and estimate that her yearly depreciation expense is $45,000. Nancy decides that double-declining balance method is a better way to calculate depreciation expense for the equipment, which are only expected to last 5 years and the salvage value is $0. What is the depreciation expense reported on December 31, 2010?

Suggested Solution:
Building Yearly Depreciation: $45,000
Equipment Yearly Depreciation: $90,000*2/5 = $36,000

Building was constructed by 9/31/2010, so it was used for 3 months, so the depreciation expense is $45,000*(3/12) = $11,250
Equipment was purchased by 10/31/2010, so it was used for 2 months, so the depreciation expense is $36,000*(2/12) = $6,000

Thus total depreciation expense reported on 12/31/2010 is: $11,250 + $6,000 = $17,250

(c) Nancy's business ventures are not as profitable as she had hoped. On June 30, 2011, Nancy sells all of her equipment to Guillermo Garcia for $80,000. What are the journal entries on Nancy's book on this day?

Suggested Solution:
By 6/30/2011:
There are two alternative methods for depreciation:

Case 1:

Year	Book Value	Annual Dep. Expense	Accumulated Depreciation
1	$90,000	$36,000 = $90,000*2/5	$36,000
2	$54,000 = $90,000 -$36,000	$21,600 = $54,000*2/5	$57,600 = $36,000 + $21,600

Year	Annual Depreciation Expense	Mon	Computation	Reported Annual Depreciation
1	$36,000	2	2/12 * $36,000	$6,000
2	$21,600	6	6/12*$36,000	$18,000

Nancy accrues another 6 months of depreciation, but we count it as part of the 1st year's depreciation since she used up 2 + 6 = 8 months out of 12 possible. For the equipment, the depreciation expense is $36,000*(6/12) = $18,000.

The total accumulated depreciation would be $6,000 + $18,000 = $24,000

Cash	$80,000	
Accumulated Depreciation	$24,000	
Equipment		$90,000
Gain on Sale of Equipment		$14,000 = $80,000 + 24,000 - $90,000

Case 2:

Depreciation Year	Computation	Reported Annual Depreciation	Months	Reported Depreciation
1	2/12 * $36,000	$6,000	2	$6,000
2	($90,000-6,000)*2/5	$33,600	6	16,800 = $33,600*6/12

The total accumulated depreciation would be $6,000 + $16,800 + $22,800

Cash	$80,000	
Accumulated Depreciation	$22,800	
Equipment		$90,000
Gain on Sale of Equipment		$12,800 = $80,000 + 22,800 - $90,000

(d) On October 31, 2011, Nancy receives an offer from Esteban Reyes to purchase the building for $1.5 million. She accepts his offer. What are the associated journal entries?

Suggested Solution:
By 10/31/2011:
Nancy accrues another 10 months of depreciation. For the building, the depreciation expense is $45,000*(10/12) = $37,500.

The total accumulated depreciation would be $11,250 + $37,500 = $48,750

Cash	$1,500,000	
Accumulated Depreciation	$48,750	
Equipment		$962,500
Gain on Sale of Equipment		$586,250

Or if you interpreted this as an executory transaction, then no journal entries are required. From page 43 of the textbook: "Recall that a liability must be reported in the balance sheet when each of the following 3 conditions is met:

1. The future sacrifice is probable.
2. The amount of obligation is known or can be reasonably estimated.
3. The transaction or event that caused the obligation has occurred.

When conditions 1 and 2 are satisfied, but the transaction that caused the obligation has not occurred, the obligation is called an executor contract and no liability is reported. An example of such an obligation is a purchase order."

Hence, if you interpreted Esteban Reyes's offer to purchase to Nancy's building as an executory transaction, then no journal entries are required.

Question 4 (16 points) Bonds

Required: Write your answer in the space below.

On December 31, 2009, Veridian Corporation issued $20 million of 4-year, 10% debentures. The market interest rate at issuance was 8%. On December 31, 2010 (after all interest payments and amortization had been recorded for 2010), the company purchased all the debentures for $19 million. Throughout their life, the debentures had been held by a large insurance company.

1. Compute the gain or loss on early extinguishment.

Suggested Solution:

Step 1: Compute the cash payments received during the inception of the bond, on December 31, 2009:

Two methods: Either through the present value of annuity and present value formulas or present value tables.

$PV = \frac{2{,}000{,}000}{0.08}\left[1 - \frac{1}{1.08^4}\right] + \frac{20{,}000{,}000}{1.08^4} = 21{,}324{,}851$

or $PV = 2{,}000{,}000(3.31213) + 20{,}000{,}000(0.73503) = 21{,}324{,}860$

I will use PV = 21,324,851 for the remaining calculation (but you should have the same solution with some rounding error)

So the journal entries at this point will be:

Cash	$21,324,851	
Bonds Liability		$20,000,000
Bonds Premium		$1,324,851

Step 2: By December 31, 2010, we must first record interest expense incurred on the bond:

$Interest\ Expense = (0.08)(21{,}324{,}851) = 1{,}705{,}988$

$Coupon = 2{,}000{,}000$ since coupon payments are 10% of $20,000,000 paid annually.

The difference between the two is $2,000,000 - $1,705,988 = $294,012

So the journal entries at the coupon payment will be:

Interest Expense/RE	$1,705,988	
Bonds Premium	$294,012	
Cash		$2,000,000

Step 3: We compute any gains or losses.

So far, we have bonds liability of $20,000,000. The bonds premium after the payment of coupon is now: $1,324,851 - $294,012 = $1,030,839. Upon the early extinguishment, Veridian pays $19,000,000 (credit cash). It will write off its bonds liability account of $20,000,000 (debit bonds liability). Any associated premium or discount must be written off as well, in this case, $1,030,839 (debit bonds premium). We compute any gains or losses. On the debit side, we have $20,000,000 + $1,030,839 = $21,030,839. On the credit side, we have only $19,000,000. Hence, there is an addition $21,030,839 - $19,000,000 = $2,030,839 on the credit side. A credit to the retained earnings means that there must be a gain. Thus, the gain on early extinguishment is $2,030,839.

2. What are the journal entries recorded on December 31, 2010?

Suggested Solution:

Bonds Liability	$20,000,000	
Bonds Premium	$1,030,839	
Cash		$19,000,000
Gain on Early Extinguishment		$2,030,839

Question 5 (24 points) Leases

Bluth Frozen Banana Company is interested in leasing a machine and has identified the following possible lease that it may acquire.

	Lease
Lease term (nonrenewable)	5 years
Estimated Useful Life of Asset	5 years
Interest rate implicit in lease	10%
Annual end of year lease payments	$150,000
Salvage Value of Asset	$0

Prior to making this decision and without the lease information, Bluth Frozen Banana Company has the follow amounts:

- Cash: $1,000,000
- Accounts Receivable: $250,000
- Inventories: $500,000
- Accounts Payable: $900,000
- Wages Payable: $100,000
- Income before lease expenses: $350,000
- Income tax rate 35%

Prepare an independent analyses that includes the *assets* and *liabilities* sections of the *balance sheet* and an *income statement*, as well as a comparison of *return on asset* and *return on equity ratios* for Bluth Frozen Banana Company under 2 scenarios: with lease (for only the first year of leasing) or without lease. Assume equity is $750,000 before considering the leases and $700,000 when considering the leases.

Suggested Solution:

Step 1: Determine whether this transaction would qualify as a capital or operating lease.
Since the lease term is equal to the estimated useful life, we know that this must be accounted for as a *capital lease*.

Step 2: Determine the present value of the lease.
When the machine is treated as a capital lease, we first must determine the present value of the machine. So the present value is calculated as $PV = \frac{150,000}{0.10}\left[1 - \frac{1}{1.1^5}\right] = 568,618.$

The following are the journal entries at the time of acquisition:

Leased Asset	$568,618	
Lease Obligation		$568,618

Step 3: Determine the depreciation.
I assume a straight-line depreciation for the asset. Hence, depreciation per year is calculated as $\frac{568,618-0}{5} = 113,724.$

The associated journal entries for depreciation are:

Depreciation Expense/Retained Earnings	$113,724	
Accumulated Depreciation		$113,724

Step 4: Determine the interest expense

The interest expense per year is calculated as $568,618 × 10% = $56,862. However, Bluth Frozen Banana Company pays $150,000 in lease. Therefore, the difference of $150,000 - $56,862 = $93,138 goes to the lease obligation.

The associated journal entries for interest expense are:

Interest Expense/Retained Earnings	$56,862	
Lease Obligation	$93,138	
Cash		$150,000

	Original Amount	Adjustment	Adjusted balance
Cash	$1,000,000	$1,000,000 - $150,000	$850,000
Leased Asset	$0	$568,618 - $113,724	$454,894
Lease Obligation	$0	$568,618 - $93,138	$475,480

For without lease, it's easy: just plug in the numbers at the correct spots.

Indicate your solution in the space provided below:

Balance Sheet

Assets

	With Lease	Without Lease
Cash	$850,000	$1,000,000
Accounts Receivable	$250,000	$250,000
Inventories	$500,000	$500,000
Leased Asset	$568,618	--
Less: Accumulated Dep.	($113,724)	--
Net Leased Asset	$454,894	--
Total Assets	$2,054,894	$1,750,000

Liabilities

	With Lease	Without Lease
Accounts Payable	$900,000	$900,000
Wages Payable	$100,000	$100,000
Lease Obligation	$475,480	--
Total Liabilities	$1,475,480	$1,000,000

Income Statement

	With Lease	Without Lease
Income before Lease Exp.	$350,000	$350,000
Depreciation Expense	($113,724)	--
Interest Expense	($56,862)	--
Income before Taxes	$179,414	$350,000
Less: Taxes @ 35%	($62,795)	($122,500)
Net Income	$116,619	$227,500

ROA & ROE

	With Lease	Without Lease
ROA = [Net Income + Interest Expense*(1-Statutory Tax rate)]/ Average Total Assets	116,619+56,862*(1-0.35) / 0.5(1,750,000+2,054,894)	227,500 / 1,750,000
ROE = Net Income / Average Stockholders' Equity	116,619 / 0.5(750,000+700,000)	227,500 / 750,000

Several answers were accepted for the computation of ROA and ROE including:

ROA = Net Income /Total Assets

ROA = Net Income /Average Total Asset

ROE = Net Income /Total Stockholders' Equity

The formulas of ROE and ROA are on pages 211 and 212 of the textbook. However, since there are variations in the definition of ROE and ROA, we accepted other answers as well.

Question 6 (18 points) Stockholders' Equity

Part A:

Pritchett Company had the following transactions during 2011:

Year 1: Pritchett Company sells 20,000 shares of its no-par common stock for $15.
Year 2: Pritchett Company buys 2,000 shares of its no-par common stock for $12 per share.
Year 3: Pritchett Company declares and pays a dividend on its no-par common stock of $3 per share. The company's basic earnings per share were $8 in the third year.
Year 4: Pritchett Company declares and pays a stock dividend on its no-par common stock of $2 per share. The company's basic earnings per share were $9 in the fourth year.
Year 5: Pritchett Company purchases 1,000 shares of available for sale securities on January 1, Year 5, for $50 per share. By December 31, the available for sale security has increased to $55 per share.

Indicate the effect (increase, decrease, no effect) of each of these stock decisions for each year on the items listed below.

Year	Total Assets	Total Liabilities	Total Equity	EPS	Operating Income
1					
2					
3					
4					
5					

Suggested Solution:

Year 1:

Journal Entries:

Cash (↑A)	$15*20,000 = $300,000	
Common Stock (↑SE)		$300,000

On page 506 of the book, the formula for basic EPS is given as the following: $Basic\ EPS = \frac{Net\ Income - Preferred\ Dividends}{Weighted\ average\ number\ of\ common\ shares\ outstanding}$.

Number of shares increased, which means EPS decreased.

Year 2:

Journal Entries:

Treasury Stock (↓SE)	$2*12,000 = $24,000	
Cash (↓A)		$24,000

Number of shares decreased, which means EPS increased.

Year 3:

Journal Entries:

Dividends/Retained Earnings (↓SE)	$3*18,000 = $54,000	
Cash (↓A)		$54,000

Number of shares remains the same, which means EPS is not affected. Income is not impacted as dividends are NOT part of the income statement.

Year 4:

Journal Entries:

Dividends/Retained Earnings (↓SE)	$2*18,000 = $36,000	
Common Stock (↑SE)		$36,000

Number of shares increased, which means EPS decreased (See page 502 of book). Income is not impacted as dividends are not part of the income statement.

Year 5:

Journal Entries:

Available for Sale Securities (↑A)	$50*1,000=$50,000	
Cash (↓A)		$50,000
Available for Sale Securities (↑A)	$5*1,000=$5,000	
Unrealized Gains on AFS Securities (↑OCI)		$5,000

Number of shares remains the same, which means EPS is not affected. Unrealized gains flow through Other Comprehensive Income, which is part of Stockholders' Equity. Any unrealized gains or losses for AFS securities do NOT impact income.

Year	Total Assets	Total Liabilities	Total Equity	EPS	Operating Income
1	Increase	No Effect	Increase	Decrease	No Effect
2	Decrease	No Effect	Decrease	Increase	No Effect
3	Decrease	No Effect	Decrease	No Effect	No Effect
4	No Effect	No Effect	No Effect	Decrease	No Effect
5	Increase	No Effect	Increase	No Effect	No Effect

Part B (Unrelated to Part A):

On June 24, 2010, Waldorf Fashion Company announced that the board of directors has authorized payment of a regular quarterly cash dividend of $0.15 per common share. The quarterly dividend is payable on October 26, 2010, to shareholders of record as of the close of business on October 5, 2010. What are the relevant journal entries for the events on June 24, October 5, and October 26? Assume the number of shares outstanding as of May 31st is 400,000,000.

Suggested Solution:
$0.15*400,000,000 = $60,000,000 of dividends will be paid out by Waldorf Fashion Company.

June 24, 2010:

Dividends/Retained Earnings	$60m	
Dividends Payable		$60m

October 5, 2010:

No journal entries are required.

October 26, 2010:

Dividends Payable	$60m	
Cash		$60m

Cash Flow Chap 4 Reading

11/21

Blockbuster - was a big operation
Then lots of competion
Un profitable
- But cash flow from operations ((FFO) still positive
- just considers out of packet cash expenditures
Cash flows must be sufficent to meet obligations when they become due
- even if profitable

Statement of cash flows

- how generates cash
- how it uses cash

Qu this answers
- paying a dividend when unprofitable
- does cash come from operations or sale of stock?

Helps us understand
liquidity = ability to pay short-term liabilities
solvency = " " " long-term "

(2)

can see if needs outside financing

lets us see where cash going/coming from

lets us see Financial flexibility = ability to generate sufficient amts of cash to respond to unanticipated needs + opportunities

---

We call cash equivilants "cash"

1. easily converted to a known cash amount
2. close enough to maturity (<3 months) that market value not sensitive to interest rate changes

treated as a single sum

transfers b/w cash + cash equiv accounts not included on cash flow

---

Framework

- can't conclude company better off if cash ↑
- " " " worse " " " ↓
- reason for change important
  - to strengthen competive position?
  - can it meet debt obligations?
  - has it sold assets to avoid debt?
- divided into 3 sections: operating, investing, financing

(3) Operating Activity

- Selling goods or rendering services
- but usually include anything not investing or financing
- inc. recievables + inventories

Inflows

1. Cash Reciepts from sales + service
2. " " interest + dividends
3. All other cash reciepts
   - insurance, lawsuit, product refund,

Outflows

1. Cash payments to employees + supplies
2. " " " purchase inventory
3. " " " interest to creditors
4. " " " taxes
5. Other " " .
   - charities, lawsuit settlements

(4)

Investing Activities

- acq + disposal of PPE + intangible assets
- purchase + sale stocks, bonds, + other activities
- lending + subsequent collection of $

Financing Activities

- reciving capital from owners
- returns capital to owners, borrows from creditors
- repays amt borrowed

Usefulness of classifications

- best source of cash: operations
- investing - likely sold off assets - 1 time only
- financing - from investors

Preparing the Statement of Cash Flows

- two methods: direct, indirect
  - direct ↑ appendix ↑ chap 3
  - indirect ↑ here almost all in practice
- both same amt net cash in each section

(5)

Indirect method

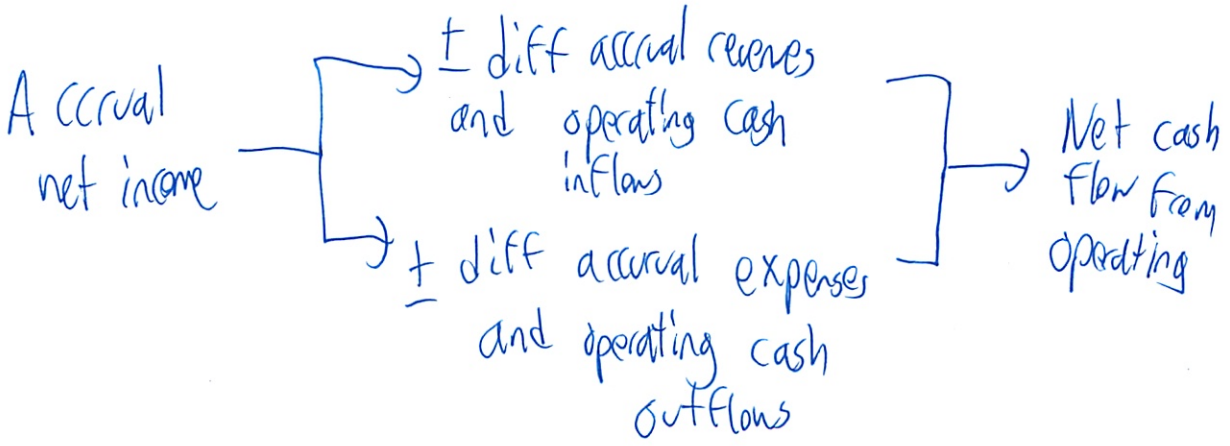
- cash flow from ops becomes w/ net income and adjustments are used to convert it to cash basic
- but are not cash flows themselves
- so just a subtotal — no details
- easier
  - if did direct, must do indirect anyway

Prepare

- gather income statement, comparitive ~~income statements~~ balance sheet + some extra accounting records
- categorize into operating, investing, + financing

Operations

- often sales/expenses on account
- depreciation expense, but not cash flow



(pointless chart)

Adjustments from net income → to operating cash flows

- can convert ⊖ income ⇆ ⊕ cash flow
- all depends on non-cash components of net income + operating cash flows not in net income

⊕ depreciation
⊕ amortization
⊕ depletion
⊕ Losses / ⊖ gains investing + financing
⊕ ↓ / ⊖ ↑ AR
⊕ ↓ / ⊖ ↑ Inventory
⊕ ↓ / ⊖ ↑ Prepaid expenses
⊕ ↑ / ⊖ ↓ AP
⊕ ↑ / ⊖ ↓ unearned rev
⊕ ↑ / ⊖ ↓ accrued liabilities
⊕ ↑ / ⊖ ↓ defered tax liab.

Investing

analyze changes in all non cash asset accounts not used in computing net cash flow from operating activities

Financing

analyze all changes in liabilities + SE not used in computing net cash flow from operating activity

(7)

Spreadsheet Approach

1. List each item on comparitive balance sheet
2. Is it ⊕/⊖ on cash flow?
3. Is it operating, investing, or financing?
4. Prepare statement of cash flows

Additional Details

- Investing + Financing
  - Must use gross amts, not net amts
  - Show purchase + sale seperatly
  - So make adjustments

...

(8)

Ratios

Operating cash flow to current liabilities

$$= \frac{\text{Net cash flow from operating activities}}{\text{avg. current liabilities}}$$

Operating Cash flow to capex

$$= \frac{\text{Net cash flow}}{\text{annual capital expenditures}}$$

Operating Cash flow to net income

$$= \frac{\text{Cash flow from operating}}{\text{Net income}}$$

Free Cash Flow

free cash flow = Cash flow from Ops − Capex − Dividends

11/22

Skipped class

Statement of Cash Flows

15.501/516 **Corporate Financial Accounting**
Fall 2010
Lecture 19

Professor Ross Watts
Sloan School of Management
Massachusetts Institute of Technology

Housekeeping

- Exams
  - Will be returned on Wednesday
- Reading
  - Dyckman Chapter 4
- Today's slides
  - Available on Stellar since Friday
- Problem set 5
  - Due December 7
- Final exam
  - December 14

Cash Flow Statement - Review

- In Lecture 3 we prepared a Cash Flow Statement from the Balance Sheet Equation spreadsheet for Joe's Landscaping (**direct method**):

	Cash	+ A/R	+ PP&E	= L/P	+ C. Cap.	+ R/E	
(1)	+$10,000				+$10,000		Share sale
(2)	+$ 3,000			+$3,000			Borrowing
(3)	-$ 5,000		+$5,000				Equipment
(4)	+$ 8,000	+$4,000				+$12,000	Service
(5)	-$ 9,000					-$ 9,000	Expenses
(6)	-$ 1,000					-$ 1,000	Dividend
Total	**$ 6,000**	**$4,000**	**$5,000**	**$3,000**	**$10,000**	**$ 2,000**	

Cash Flow Statement - Review

Operating activities:		
Cash sale of services (4)	$8,000	
Cash payments for expenses (5)	($9,000)	
Net cash from operating activities		($1,000)
Investing activities:		
Purchase of equipment (3)	($5,000)	
Net cash from investing activities		($5,000)
Financing activities:		
Borrowings (2)	$3,000	
Owner contributions (1)	$10,000	
Payment of dividends (6)	($1,000)	
Net cash from financing activities		$12,000
Increase in cash balance		$6,000
Cash balance at beginning of year		$0
Cash balance at end of year		$6,000

Cash Flow Statement - Review

- Measures change in cash account between two balance sheets
- Breaks cash inflows/outflows into three sources
  - Operating
  - Investing
  - Financing

Operating Activities

- Primary activity of business
  - Selling goods
  - Providing services
  - Manufacturing
  - Cost of Sales
  - Advertising
  - Paying employees
  - Paying utilities

Investing Activities

- Obtaining/selling resources or assets to operate the business
  - Land
  - Buildings
  - Vehicles
  - Computers
  - Furniture
  - Equipment

7

Financing Activities

- Borrowing creates ***liabilities***
  - Bank loans
  - Debt securities
  - Goods on credit or payables
- Selling stock creates ***stockholders' equity***
  - Sales of stock
  - Paying dividends

8

More generally

- Operating activities
  - Changes in current assets & current liabilities
- Investing activities
  - Changes in long-term assets
- Financing activities
  - Changes in long-term liabilities & equity
- Changes can be increases or decreases

9

Cash Flow Statement - direct method

Operating activities:		
Cash sale of services (4)	$8,000	
Cash payments for expenses (5)	($9,000)	
Net cash from operating activities		($1,000)
Investing activities:		
Purchase of equipment (6)	($5,000)	
Net cash from investing activities		($5,000)
Financing activities:		
Borrowings (2)	$3,000	
Owner contributions (1)	$10,000	
Payment of dividends (6)	($1,000)	
Net cash from financing activities		$12,000
Increase in cash balance		$6,000
Cash balance at beginning of year		$0
Cash balance at end of year		$6,000

10

Indirect Cash Flow Statement

- Most companies use the **indirect** method
- **Only difference** with the direct cash flow statement is **presentation**
- **Change in cash** is **identical** in direct vs. indirect
- **Presentation** of **investing & financing** sections is **identical** in direct vs. indirect
- **Presentation** of **operating section is different** but change in cash from operations is identical in direct vs. indirect

11

Indirect Cash Flow Statement

- **Direct** cash flow from operations is **cash inflow less cash outflow from operations**
- **Indirect** cash flow from operations **starts with net income**
- Net income is adjusted for all **non-cash accruals** related to operations to arrive at cash flow from operations
- **Non-cash operating accruals** are generally **captured in current assets & liabilities**

12

Indirect Presentation Practice

- Company sells $4M of product on credit & the account receivable is still outstanding at year-end
- Effect on cash?
- Effect on net income?
- To **start at net income & end at cash flow from operations**, what must one do with this item?

13

Indirect Presentation Practice

- Company collects $1M for product sold last year on credit
- Effect on cash?
- Effect on net income?
- To **start at net income & end at cash flow from operations**, what must one do with this item?

14

Indirect Presentation Practice

- Company buys $7M of inventory that remains unsold at year-end. The account payable is paid during the year.
- Effect on cash?
- Effect on net income?
- To **start at net income & end at cash flow from operations**, what must one do with this item?

15

Indirect Presentation Practice

- Company sells $2M of inventory that was purchased and paid for during year
- Effect on cash?
- Effect on net income?
- To **start at net income & end at cash flow from operations**, what must one do?

16

Indirect Presentation Practice

- Company sells $8M of inventory that was purchased & paid for during prior year
- Effect on cash?
- Effect on net income?
- To **start at net income & end at cash flow from operations**, what must one do?

17

Inventory changes & OCF adjustments

- ...buys $7M of inventory that remains unsold
  - Inventory change?
  - Income adjustment to obtain operating cash flows (OCF)
- ...sells $2M of inventory purchased during the year
  - Inventory change?
  - Income adjustment to obtain OCF?
- ...sells $8M of inventory purchased during prior year
  - Inventory change ?
  - Income adjustment to obtain OCF?

18

Indirect Presentation Practice

- Company pays $3M for advertising this year
- Effect on cash
- Effect on net income
- To start at net income & end at cash flow from operations, **no adjustment** necessary

19

Indirect Presentation Practice

- Company incurs $5M of wages payable for wages expensed in current year
- Effect on cash
- Effect on net income
- To start at net income and end at cash flow from operations, must **add** $5M for increase in wages payable

20

Indirect Presentation Practice

- Company pays $9M for wages expensed during prior year
- Effect on cash
- Effect on net income
- To start at net income and end at cash flow from operations, must **subtract** $9M for decrease in accounts payable

21

Wages payable changes & OCF adjustments

- ... incurs $5M wages payables for wages expensed in **current** year
  - Change in wages payable?
  - Adjustment to obtain operating cash flows?
- ... pays $9M for wages expensed during **prior** year
  - Change in wages payable?
  - Adjustment to get to operating cash flows?

22

Summary of net income adjustments

for changes in non-cash current assets & liabilities

- Increase in non-cash current assets
  - Increase in accounts receivable deducted from Net Income (slide 13)
  - Increase in inventory deducted from Net Income (slide 15)
- Decrease in non-cash current assets
  - Decrease in accounts receivable added to Net Income (slide 14)
  - Decrease in inventory added to Net Income (slide 17)
- Increase in current liabilities
  - Increase in wages payable added to Net Income (slide 20)
- Decrease in current liabilities
  - Decrease in accounts payable deducted from Net Income (slide 21)

23

Net Income adjustments for Depreciation & amortization

- Company recognizes $6M in depreciation expense
- Effect on cash
- Effect on net income
- To start at net income & end at cash flow from operations, must **add back** $6M for depreciation expense

24

Gains & Losses on sale of assets

- Company sells an asset for $2,000
  - Purchase price was $10,000
  - Accumulated depreciation $9,000
- What is the gain/loss on sale?
- Effect on operating cash flow?
- To start at net income & end at cash flow from operations must deduct gains on sale & add back losses on sale

25

Calculating OCF (Indirect method)

AR= declined by $80,000
Prepaid Expense = increased by $28,000
Inventory= increased by $30,000
NI = $200,000

Net Income		$200,000
Adjustments to reconcile net income to net cash provided by operating activities		
Decrease in accounts receivable		
Increase in prepaid expenses		
Increase in inventories		
Net cash provided by operating activities		$222,000

26

Calculate Operating CF

Depreciation was $160,000
AR decreased by $350,000
AP decreased by $280,000
Net Income was $2,500,000

Net Income		
Adjustments to reconcile net income to net cash provided by operating activities		
Depreciation expense		
Accounts Receivable decrease		
Accounts Payable decrease		
Net cash provided by operating activities		

27

Calculate Operating CF

Depreciation was $70,000
Loss on the sale of an asset $12,000
Net Income was $280,000

Net Income		$280,000
Adjustments to reconcile net income to net cash provided by operating activities		
Depreciation expense		
Loss on the sale of an asset		
Net cash provided by operating activities		

28

Calculate Operating CF

Depreciation was $45,000
Loss on the sale of an asset $5,000
Net Income was $195,000
AR decreased by $15,000
Prepaid Expense decreased by $4,000
AP increased by $17,000

Net Income		$195,000
Adjustments to reconcile net income to net cash provided by operating activities		
Depreciation expense		
Loss on the sale of an asset		
Decrease in accounts receivable		
Decrease in prepaid expenses		
Increase in accounts payable		
Net cash provided by operating activities		

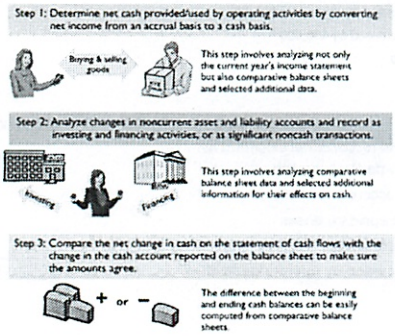
29

Indirect Method

- Most companies favor the indirect method for the following reasons:
  - Easier to prepare
  - Focuses on differences between net income & net cash flow from operating activities
  - Tends to reveal less company information to competitors
    - Over Ninety-eight (98.8)% of companies use the indirect method

30

Steps in Preparing SCF



31

Step 1 in to converting NI to CFO

Net Income	+/−	Adjustments	=	Net Cash Provided/ Used by Operating Activities

- **Add back noncash expenses**, such as depreciation expense, amortization, or depletion.
- **Deduct gains and add losses** that resulted from investing and financing activities.
- **Analyze changes** to noncash current asset and current liability accounts.

32

Income Statement and Additional Information

COMPUTER SERVICES COMPANY
Income Statement
For the Year Ended December 31, 2007

Revenues		$507,000
Cost of goods sold	$150,000	
Operating expenses (excluding depreciation)	111,000	
Depreciation expense	9,000	
Loss on sale of equipment	3,000	
Interest expense	42,000	$315,000
Income before income tax		192,000
Income tax expense		47,000
Net income		$145,000

Additional information for 2007:
1. The company declared and paid a $29,000 cash dividend.
2. Issued $110,000 of long-term bonds in direct exchange for land.
3. A building costing $120,000 was purchased for cash. Equipment costing $25,000 was also purchased for cash.
4. The company sold equipment with a book value of $7,000 (cost $8,000, less accumulated depreciation $1,000) for $4,000 cash.
5. Issued common stock for $20,000 cash.
6. Depreciation expense was comprised of $6,000 for building and $3,000 for equipment.

33

COMPUTER SERVICES COMPANY
Comparative Balance Sheets
December 31

Assets	2007	2006	Change in Account Balance Increase/Decrease
Current assets			
Cash	$ 55,000	$ 33,000	$ 22,000 Increase
Accounts receivable	20,000	30,000	10,000 Decrease
Merchandise inventory	15,000	10,000	5,000 Increase
Prepaid expenses	5,000	1,000	4,000 Increase
Property, plant, and equipment			
Land	130,000	20,000	110,000 Increase
Building	160,000	40,000	120,000 Increase
Accumulated depreciation—building	(11,000)	(5,000)	6,000 Increase
Equipment	27,000	10,000	17,000 Increase
Accumulated depreciation—equipment	(3,000)	(1,000)	2,000 Increase
Total	$398,000	$138,000	
Liabilities and Stockholders' Equity			
Current liabilities			
Accounts payable	$ 28,000	$ 12,000	$ 16,000 Increase
Income tax payable	6,000	8,000	2,000 Decrease
Long-term liabilities			
Bonds payable	130,000	20,000	110,000 Increase
Stockholders' equity			
Common stock	70,000	50,000	20,000 Increase
Retained earnings	164,000	48,000	116,000 Increase
Total liabilities and stockholders' equity	$398,000	$138,000	

Adjustment of Depreciation (step 1)

Cash flows from operating activities		
Net income		$145,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation expense		9,000
Net cash provided by operating activities		$154,000

35

Adjustment of Loss on Equipment (step 1)

Cash flows from operating activities		
Net income		$145,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation expense	$9,000	
Loss on sale of equipment	3,000	12,000
Net cash provided by operating activities		$157,000

36

Adjustment For Changes in Current Assets (step 1)

Cash flows from operating activities		
Net income		$145,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation expense	$ 9,000	
Loss on sale of equipment	3,000	
Decrease in accounts receivable	10,000	
Increase in merchandise inventory	(5,000)	
Increase in prepaid expenses	(4,000)	13,000
Net cash provided by operating activities		$158,000

37

Adjustment For Changes in Current Liabilities (step 1)

Cash flows from operating activities		
Net income		$145,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation expense	$ 9,000	
Loss on sale of equipment	3,000	
Decrease in accounts receivable	10,000	
Increase in merchandise inventory	(5,000)	
Increase in prepaid expenses	(4,000)	
Increase in accounts payable	16,000	
Decrease in income tax payable	(2,000)	27,000
Net cash provided by operating activities		$172,000

38

Overview of Step 1 Adjustments

		Adjustment Required to Convert Net Income to Net Cash Provided by Operating Activities
Noncash charges	Depreciation expense	Add
	Patent amortization expense	Add
	Depletion expense	Add
Gains and losses	Loss on sale of plant asset	Add
	Gain on sale of plant asset	Deduct
Changes in current assets and current liabilities	Increase in current asset account	Deduct
	Decrease in current asset account	Add
	Increase in current liability account	Add
	Decrease in current liability account	Deduct

39

Step 1 →

COMPUTER SERVICES COMPANY
Statement of Cash Flows—Indirect Method
For the Year Ended December 31, 2007

Cash flows from operating activities		
Net income		$ 145,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation expense	$ 9,000	
Loss on sale of equipment	3,000	
Decrease in accounts receivable	10,000	
Increase in merchandise inventory	(5,000)	
Increase in prepaid expenses	(4,000)	
Increase in accounts payable	16,000	
Decrease in income tax payable	(2,000)	27,000
Net cash provided by operating activities		172,000
Cash flows from investing activities		
Purchase of building	(120,000)	
Purchase of equipment	(25,000)	
Sale of equipment	4,000	
Net cash used by investing activities		(141,000)
Cash flows from financing activities		
Issuance of common stock	20,000	
Payment of cash dividends	(29,000)	
Net cash used by financing activities		(9,000)
Net increase in cash		22,000
Cash at beginning of period		33,000
Cash at end of period		$ 55,000
Noncash investing and financing activities		
Issuance of bonds payable to purchase land		$ 110,000

Income Statement and Additional Information

COMPUTER SERVICES COMPANY
Income Statement
For the Year Ended December 31, 2007

Revenues		$507,000
Cost of goods sold	$150,000	
Operating expenses (excluding depreciation)	111,000	
Depreciation expense	9,000	
Loss on sale of equipment	3,000	
Interest expense	42,000	$315,000
Income before income tax		192,000
Income tax expense		47,000
Net income		$145,000

Information for Step 2 →

Additional information for 2007:
1. The company declared and paid a $29,000 cash dividend.
2. Issued $110,000 of long-term bonds in direct exchange for land.
3. A building costing $120,000 was purchased for cash. Equipment costing $25,000 was also purchased for cash.
4. The company sold equipment with a book value of $7,000 (cost $8,000, less accumulated depreciation $1,000) for $4,000 cash.
5. Issued common stock for $20,000 cash.
6. Depreciation expense was comprised of $6,000 for building and $3,000 for equipment.

41

Relevant additional information

Dividend	Yes
Bonds	No
Building & equipment purchase	Yes
Sale of equipment	Yes
Common stock issue	Yes
Depreciation expense	Already adjusted

42

COMPUTER SERVICES COMPANY
Comparative Balance Sheets
December 31

Assets	2007	2006	Change in Account Balance Increase/Decrease
Current assets			
Cash	$ 55,000	$ 33,000	$ 22,000 Increase
Accounts receivable	20,000	30,000	10,000 Decrease
Merchandise inventory	15,000	10,000	5,000 Increase
Prepaid expenses	5,000	1,000	4,000 Increase
Property, plant, and equipment			
Land	130,000	20,000	110,000 Increase
Building	160,000	40,000	120,000 Increase
Accumulated depreciation—building	(11,000)	(5,000)	6,000 Increase
Equipment	27,000	10,000	17,000 Increase
Accumulated depreciation—equipment	(3,000)	(1,000)	2,000 Increase
Total	$395,000	$138,000	
Liabilities and Stockholders' Equity			
Current liabilities			
Accounts payable	$ 28,000	$ 12,000	$ 16,000 Increase
Income tax payable	6,000	8,000	2,000 Decrease
Long-term liabilities			
Bonds payable	130,000	20,000	110,000 Increase
Stockholders' equity			
Common stock	70,000	50,000	20,000 Increase
Retained earnings	164,000	48,000	116,000 Increase
Total liabilities and stockholders' equity	$395,000	$138,000	

Information for Step 2

COMPUTER SERVICES COMPANY
Statement of Cash Flows—Indirect Method
For the Year Ended December 31, 2007

Cash flows from operating activities		
Net income		$ 145,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation expense	$ 9,000	
Loss on sale of equipment	3,000	
Decrease in accounts receivable	10,000	
Increase in merchandise inventory	(5,000)	
Increase in prepaid expenses	(4,000)	
Increase in accounts payable	16,000	
Decrease in income tax payable	(2,000)	27,000
Net cash provided by operating activities		172,000
Cash flows from investing activities		
Purchase of building	(120,000)	
Purchase of equipment	(25,000)	
Sale of equipment	4,000	
Net cash used by investing activities		(141,000)
Cash flows from financing activities		
Issuance of common stock	20,000	
Payment of cash dividends	(29,000)	
Net cash used by financing activities		(9,000)
Net increase in cash		22,000
Cash at beginning of period		33,000
Cash at end of period		$ 55,000
Noncash investing and financing activities		
Issuance of bonds payable to purchase land		$ 110,000

Step 2

Step 3

Significant Noncash Activities...

- That do NOT affect cash are NOT reported in the body of the statement of cash flows.
  - Issuance of common stock to purchase an assets.
  - Conversion of bonds into common stock.
  - Issuance of debt to purchase assets.
  - Exchanges of plant assets.

45

Significant Non-cash Activities...

- Are reported:
  - In a separate schedule at the bottom of the statement of cash flows or
  - In a separate note or supplementary schedule to the financial statements.

46

11/29

Financial Statement Analysis 1

15.501/516 **Corporate Financial Accounting**
Fall 2010
Lecture 21

Professor Ross Watts
Sloan School of Management
Massachusetts Instituteof Technology

Housekeeping

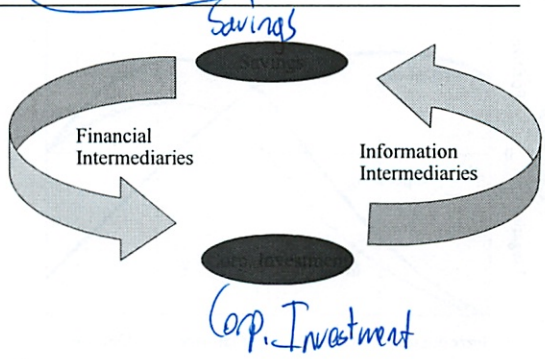
- Reading
  - Dyckman chapter 5, pp. 205 - 207 not much in book
- Slides
  - Put on Stellar Saturday
- Problem set 5
  - Due December ~~1~~ 6 (correction)
- Final exam
  - December 14

Agenda

- This lecture
  - Fundamental analysis
    - Relation between accounting performance& economic performance
    - What real activities drive the firm's return on equity (ROE)?
    - What is the firm's strategy?
    - How long are strategies successful?
- Next lecture
  - Overview of ratio analysis
  - Share valuation and sustainable income

getting a feel for the #

Capital Markets



important to know what fin statements are telling you

What is financial statement analysis?

- Financial statements are a primary source of information about corporations & their investments
  - why making $
- Financial statement analysis is used by professional investors & analysts
  - To answer their questions about firms
  - To help value a firm for trading purposes

- what prospects are

Fundamental analysis

- Is the process of using
  - Knowledge of a firm's business
    &
  - Analysis of the firm's financial statement information
    - including footnotes

  what should be doing

to
- Forecast the firm's future payoffs (cash flows) &
- Value the firm's securities

for
- Trading or recommendation purposes

try to dig out info

Got to know the business

Knowledge of the firm's business

- Products
- Life cycle stage
- Competition + potential competition
- Customers
- Comparative advantage
- Regulatory constraints - can change
- Strategy

Some industries → sales reported every month

7

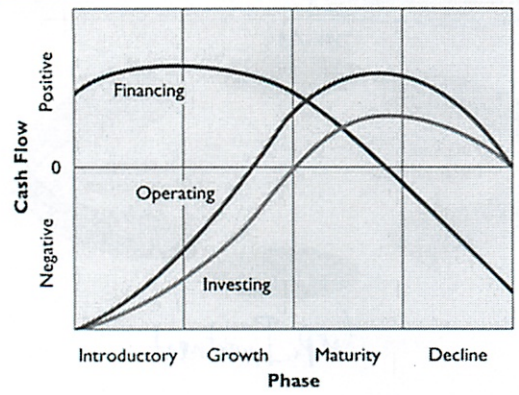
Financial reports & business assessment

- By looking at the company's realized financial numbers (cash flows, financial ratios etc) we can assess:
  - Firm's life cycle stage (see Lecture 20);
  - Competitive situation in the firm's industry;
  - Firm's competitive advantage (if any); &
  - Whether the firm's strategy is successful given those situations

Can get from fin reports

8

Impact of Product Life Cycle on Cash Flows



9

Life cycle stage

- Tells what to expect in terms of firm's attributes
- For example
  - Growth prospects
  - Cash flow problems

10

Assessment of competitive situation

- Accounting net income helps assess the firm's competitive situation
- If an industry is competitive
  - firm being assessed + other firm in industry
- If a firm is earning an above competitive rate of return given the risk (economic profits or rents), we have to ask
  - Is it a growth stock?

Will need to use a lot of stuff outside accounting reports

Look at financial rate of return not stock market rate of return

Already figured in (fin rate of return)

11

Using accounting net income to assess competitiveness

- Economic profit is the residual income after deducting the product of
  - Competitive rate of return given the business' risk &
  - The value of the net resources invested in the business
- Accounting profit or net income = Revenue - Expenses
- What is a major difference between economic & accounting profit?

Are they getting this?

interest rate to discount at

net resources

- where is it generating that rent above competitive
- how long will it last?

12

ATR = asset turnover ratio

Traditional ROE decomposition

This would give the following ROE decomposition:

$$ROE = \frac{NOPAT}{Sales} \times \frac{Sales}{Assets} \times \frac{Net\ income}{NOPAT} \times \frac{Assets}{Shareholders'\ equity}$$

= net operating profit margin x asset turnover x earnings leverage x financial leverage

19

Returns and strategies in the retail industry

Identify which firm is which? TJ Max,, J C Penny & The GAP

TJX JC GAP

ROE = ROA x LEV
ROA = ROS x ATR

	2004	2004	2004
ROE	0.380	0.134	0.237
ROA	0.129	0.041	0.113
ROS	0.041	0.036	0.071
ATR	3.149	1.136	1.596
LEV	2.955	3.250	2.098

TJX = highest ROE

but TJX higher ROE driven by Lev

TJX ROA also driven by ATR

20

How do the ratios vary over time?

- Returns (ROA, ROE) & Sales growth mean revert

  What causes the reversion?

  Competition!

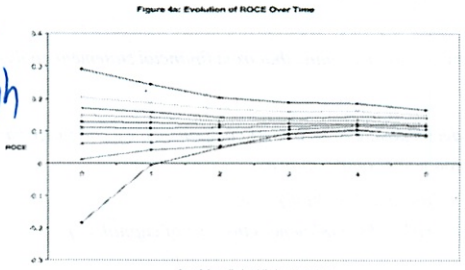
- Policies or strategies (LEV, ATR & ROS) are relatively stationary in the short-term

21

Time Series Properties of Ratios

Evolution of Return on Common Equity Over Time

Why don't firms keep making high returns?



from: Nissim and Penman: Ratio Analysis and Equity Valuation (Review of Acct. Studies, April 2001)

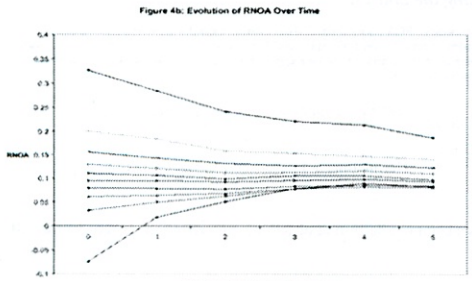
22

may have too high risk though

- need to maximize value of assets - Not ROE

Time Series Properties of Ratios

Evolution of Return on Net Operating Assets Over Time



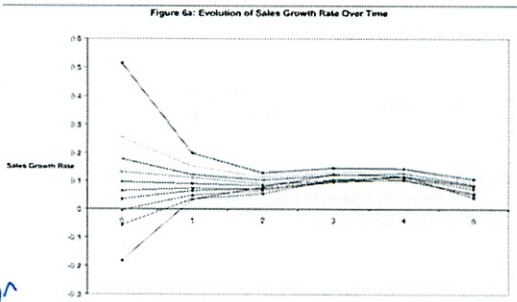
from: Nissim and Penman: Ratio Analysis and Equity Valuation (Review of Acct. Studies, April 2001)

23

must keep adjusting - need Competition

Time Series Properties of Ratios

Evolution of Sales Growth Over Time



from: Nissim and Penman: Ratio Analysis and Equity Valuation (Review of Acct. Studies, April 2001)

24

- need to worry about declining revenue

not Interest on equity
just interest on debt
- so need to deduct interest on debt

Relation between Economic & Accounting Profits

Economic Profit = Accounting Profit – Charge for cost of equity capital

$$RI = NI - r_E \cdot BVE$$

where RI is residual income, NI is net income (earnings), r_E is the cost of equity capital, and BVE is the book value of shareholders' equity

tri to take out a Charge for

book value of equity
- equal to book value of firm (at market price)
↑ whats left
- if 'ideal

(confused-y)

need to adjust for diff debt b/w equity
↑ will earn more $ - but have to pay higher market rate

Relation between Economic & Accounting Profits

Define rate of return on equity, ROE: $ROE = NI / BVE$

$NI = ROE \times BVE$

This allows us to re-write residual income:

$$RI = NI - r_E \cdot BVE = (ROE - r_E) \cdot BVE$$

To add to shareholder value – to have a positive economic profit – a firm must achieve an ROE at least as high as its cost of equity capital

economic income is excess
- Must have ⊕ economic profit to add to shareholder value

14

Assessment of competitive situation

What real business activities drive ROE?

How can we determine that from financial statement analysis?

By decomposing ROE into its components, we can judge each component's contribution to

profitability (ROE) &
risk (which influences the cost of capital, r_E)

15

Traditional ROE decomposition

See Lecture 13

Step 1: Is ROE driven by operating activities or financing?

$$ROE = ROA \times Financial\ leverage = \frac{Net\ income}{Assets} \times \frac{Assets}{Shareholders'\ equity}$$

measure of leverage

16

good times - equity owners do well
- more in good times

Traditional ROE decomposition

See Lecture 13

Step 2: operating activities

$$ROA = ROS \times ATR = \frac{Net\ income}{Sales} \times \frac{Sales}{Assets}$$

For reference back to Lecture 13 slide 24
ROS = Return on Sales or Profit margin
ATR = Asset turnover ratio

17

Traditional ROE decomposition

Refining the analysis:

Inconsistency: ROA (as we defined it) has a denominator that includes assets claimed by *all* providers of capital to the firm (equity *and* debt holders), whereas the numerator only includes income to equity holders (i.e., income after interest expense). A way to remedy this is the following definition:

$$ROA = \frac{NOPAT\ (Net\ Operating\ Profit\ After\ Taxes)}{Assets} = \approx \frac{\text{Net income} + \text{Interest expense} \times (1 - \text{tax rate})}{Assets}$$

This is a common definition of ROA (some refer to it as 'pre-interest ROA').

18

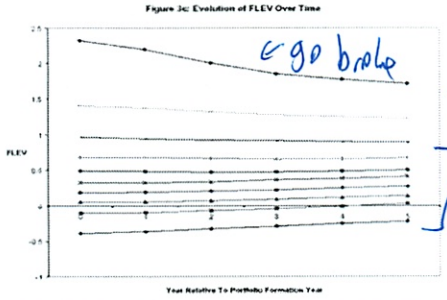
with debt → get more variability in equity return b/c debt paid 1st

↓ policies

Brown is the same in all the graphs — same lines maintained

Time Series Properties of Ratios

Evolution of Leverage (LEV) Over Time



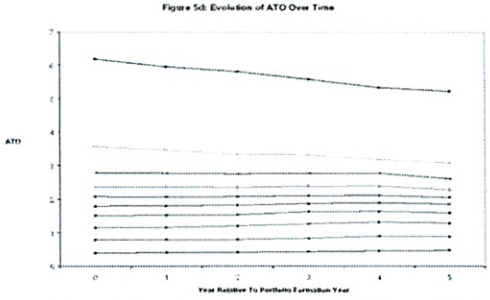
e go broke

approaches but fairly Constant

from: Nissim and Penman: Ratio Analysis and Equity Valuation (Review of Acct. Studies, April 2001) 25

Time Series Properties of Ratios

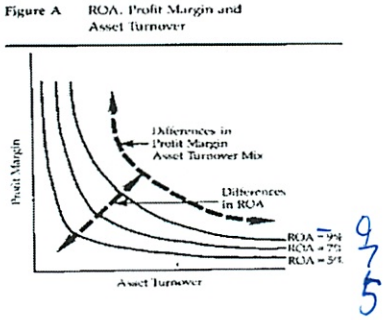
Asset Turnover Ratio (ATR) Over Time



from: Nissim and Penman: Ratio Analysis and Equity Valuation (Review of Acct. Studies, April 2001) 26

Combinations of Strategies

Effects of Profit Margin & ATR on ROA

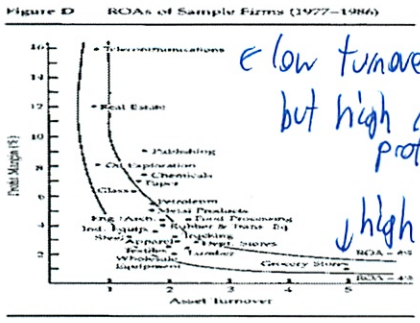


9 7 5

27

Combinations of Strategies

Effects of Profit Margin & ATR on ROA



low turnover but high rate of return profit margin

↓ high asset turnover

28

analize these patterns

Company Analysis

- Strategy & competition?
- Where would we expect to see the effect of those dimensions in the financial statements?
- Is it possible to "beat" the typical patterns?
  - combine high margins with high turnover?
  - avoid the 'mean reversion'?
- What are the key characteristics?

Can you beat the curve

Need to explain how ya will do better

29