blue ~ in lecture
~ black after lecture

11/3

Long-term Debt

15.501/516 **Corporate Financial Accounting**
Fall 2010
Lecture 15

Professor Ross Watts
Sloan School of Management
Massachusetts Institute of Technology

Agenda

- Nature of current liabilities
- Long term debt
  - Nature & types
  - Valuation
  - Accounting & reporting

Current Liabilities

- Current liabilities are debts that can reasonably be expected to be paid
  - From existing current assets or through the creation of other current liabilities, &
  - Within 1 year or the operating cycle, whichever is longer
- Long-Term Liabilities are debts that do *not* meet both the above criteria

Types of Current Liabilities

- Notes payable & other short-term borrowing
- Current Maturities of Long-term Debt
- Accounts Payable
- Unearned Revenues
- Accrued Liabilities
  - Taxes
    - Income, Sales, Payroll
  - Salaries & Wages
  - Interest
  - Warranties

Long-term Liabilities

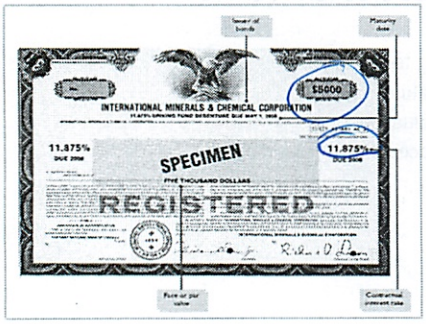
- Obligations spanning a longer period
  - generally more than a year
- Generally reported on the balance sheet at **present value** using interest rate when initiated
- Examples:
  - Bonds
  - Long-term loans
  - Mortgages
  - Capital Leases
- How do we compute
  - present values?
  - interest expense?

use interest rate at that point in time
discount FV → PV

Bonds

- **A form of long-term, interest-bearing security issued by corporations, universities and governmental agencies**
- **Sold in small denominations, (usually multiples of $1,000) which makes them attractive to investors**
- **Are in the form of a legal document that indicates the name of the issuer, the face value of the bonds, the contractual interest rate, and the maturity date**

Bond Certificate



Bonds

- Periodic interest payments & face value due at maturity
- Face value (amount)
  - (Principal) Amount due at maturity
- Interest payments
  - Coupon rate times the face value of debt
  - Coupon rate is the interest rate stated in the note
    - used to calculate interest payments
- Market rate of interest
  - The rate of interest demanded in the market place given the risk characteristics of a bond
  - Can be higher or lower than the coupon rate

important in valuing

set before you issue them

Bonds

- Nature of claim
  - Secured or unsecured
    - By claims against specific assets of borrower
    - Most issued by industrial/financial companies are unsecured
  - Convertible or not
    - Into common stock at the bondholder's option
  - Callable or not
    - Issuer can retire the bond at a stated price prior to maturity
- Zero coupon bonds
  - No coupon payments
  - Single payment at maturity
  - Sold below face value

real estate, assets - if go bankrupt

option

out of fixed claim

force to give them back

to improve balance sheet

used alot in financial firms for hedges, etc

Accounting for Bond Issues

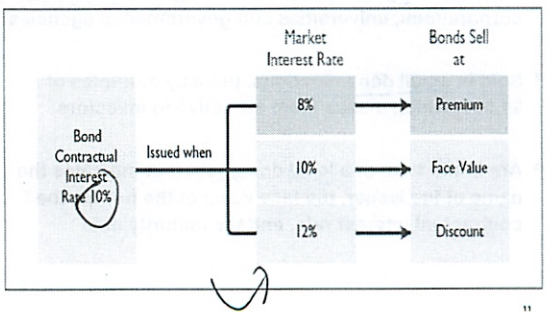
Bonds may be issued at

- Face value
  when stated rate = market rate
- Below face value (discount)
  when stated rate < market rate
  - must discount price to get investors to buy
- Above face value (premium)
  when stated rate > market rate
  - all investors want to own so the price is bid up

reverse as before ???

Oh well go w/ this

Interest Rates and Bond Prices



11

Accounting for a Bond issued at par

Coupon Rate 6% = Market Rate 6%

- At the time of the bond issue
  - Dr Cash 10,000
  - Cr Bond Payable 10,000
- Periodically thereafter
  - Cash interest payments= Face Value x Coupon rate
  - Bond payable at the present value of cash flows, i.e., the present value of interest and principal
  - Interest expense = Bond payable x market interest rate
  - Difference between interest expense and cash interest payment is added to Bond Payable

when paid

- At maturity
  - Pay interest and entire principal balance

12

Accounting for a Bond issued at par
Coupon Rate 6% = Market Rate 6%

- What is the present value of the bond?
- Payment stream
  - Three annual coupon payments of $600 each
  - Principal payment of $10,000 at the end of three years
- Present value
  - PV of ordinary annuity, n = 3, r = 6%, Table 4
  - $600 x 2.67301 = $1,603.81
  - PV of $10,000, n = 3, r = 6%, Table 3
  - $10,000 x 0.83962 = $8,396.20
  - PV = $1,603.81 + $8,396.20 = $10,000

at what pt in time?
now w/ interest + principal

13

Accounting for a Bond issued at par
Coupon Rate 6% = Market Rate 6%

- End of year 1
  - Interest expense = $10,000 x 6%
  - Coupon payment = $10,000 x 6%

for Company

Dr Interest expense	600	
Cr Cash		600

- End of year 2

Dr Interest expense	600	
Cr Cash		600

- End of year 3

Dr Interest expense	600	
Cr Cash		600
Dr Bond Payable	10,000	
Cr Cash		10,000

fairly clear

14

Accounting for a Bond issued at par
Coupon Rate 6% = Market Rate 6%

	Cash	=	Bond Payable
Issuance	10,000	=	10,000

	Cash	=	Bond Payable	+	Ret Earnings
2001	(600)	=			(600)
2002	(600)	=			(600)
2003	(600)	=			(600)
	(10,000)		(10,000)		

15

Zero-Coupon Bond
Coupon Rate 0% < Market Rate 6%

- The zero-coupon bond pays $10,000 at the end of three years.
- What is the present value of the zero-coupon bond?
  - PV of $10,000, n = 3, r = 6%, Table 3
  - $10,000 x 0.83962 = $8,396.20

people normally won't do

16

Zero-Coupon Bond
Coupon Rate 0% < Market Rate 6%

- At the time of the bond issue

Dr Cash	8,396.20	
Dr Discount on bonds payable	1,603.80	
Cr Bond Payable		10,000.00

- Balance sheet presentation

Bond payable, gross	$ 10,000.00
Less Discount	($ 1,603.80)
Net Bond Payable	**$ 8,396.20**

& oh must record the discount!

17

Zero-Coupon Bond
Coupon Rate 0% < Market Rate 6%

- Over time, the discount is reduced so that at maturity the net bond payable equals the face value of the bonds, $10,000

but is reduced over time

- Periodically after issuance
  - Cash interest payments = 0
  - Interest expense = Bond payable x market interest rate
  - Difference between interest expense and cash interest payment reduces Discount Account
- At maturity
  - Pay interest & entire principal balance
  - Remove Bonds Payable

but not paid at?

thought 0 interest

18

Zero-Coupon Bond
Coupon Rate 0% < Market Rate 6%

- End of year 1
  - Interest expense = $8,396.2 x 6% = 503.77
  - No cash interest payment, so add the interest to Bond Payable

Dr Interest expense	**503.77**	
Cr Discount		**503.77**

- Balance in Discount Account = $(1,603.80 – 503.77)
  = $ 1,100.03
- Net Bonds Payable = $8,396.20 + 503.77 = $8,899.97
- *OR*
- Net Bonds Payable = $10,000 – (1,100.03) = $8,899.97

oh just need to record and reduce "discount" on balance sheet

Zero-Coupon Bond
Coupon Rate 0% < Market Rate 6%

- End of year 2
  - Interest expense = $8,899.97 x 6% = 534.00
  - No cash interest payment, so add the interest to Bond Payable

Dr Interest expense	**534.00**	
Cr Discount		**534.00**

- Balance in Discount Account = $(1,100.03 – 534.00)
  = $ 566.03
- Net Bonds Payable = $8,899.97 + 534.00 = $9,433.97
- *OR*
- Net Bonds Payable = $10,000 – 566.03 = $9,433.97

20

Zero-Coupon Bond
Coupon Rate 0% < Market Rate 6%

- End of year 3
  - Interest expense = $ 9,433.97 x 6% = 566.03
  - No cash interest payment, so add the interest to Bond Payable

Dr Interest expense	**566.03**	
Cr Discount		**566.03**

- Balance in Discount Account = $(566.03 – 566.03) = $ 0
- Net Bonds Payable = $9,433.97 + 566.03 = $10,000
- *OR*
- Net Bonds Payable = $10,000 – 0 = $10,000

  - Pay off the bond at maturity

Dr Bond Payable	10,000	
Cr Cash		10,000

21

Zero-Coupon Bond
Coupon Rate 0% < Market Rate 6%

	Cash	=	[Bond Payable	– Discount =]	NBP
Issue	8,396.20	=	[10,000	- 1,603.80 =]	8,396.20

	Cash	=	[Bond Payable	- Discount =]	NBP +	RE
2001	0	=		503.77		(503.77)
EB			*10,000*	*- 1,100.03*	*8899.97*	
2002	0	=		534		(534)
EB			*10,000*	*- 566.03*	*9433.97*	
2003	0	=		566.03		(566.03)
EB			*10,000*	*0*	*10,000*	
Pay off the bond						
	(10,000)				**(10,000)**	

22

but how to forcast as market rate always changes?

Bond issued at a Discount
Coupon rate 6% < Market rate at issuance 8%

- What is the present value of the bond?
- Payment stream
  - Interest payments = Coupon rate x Face Value= $600
  - Principal at maturity = $10,000
- Present Value
  - PV of cash flows discounted at the MARKET interest rate of 8%
  - PVOA (n = 3, r = 8%) x $600 = 2.57710 x 600 = $1,546.26
  - PV of (10,000, n = 3, r = 8%) = 0.79383x 10,000 = $7,938.30
  - Total = $9,484.56

Bond Payable	$10,000.00
Less Discount	(515.44)
Net Bond Payable	$9,484.56

23

need to make it cheaper for people to buy (again no risk)

need to record this discount you have temp

Bond issued at a Discount
Coupon rate 6% < Market rate at issuance 8%

- At Issuance

Dr Cash	9,484.56	
Dr Discount on Bond Payable	515.44	
Cr Bond Payable		10,000

- At the end of first year
  - Interest expense
    - Net Bond Payable x 8%
    - $9,484.56 x 8% = $758.77

Dr Interest expense	758.77	
Cr Cash		600.00
Cr Discount on Bond Payable		158.77

- Net Bond Payable = $9,484.56 + 158.77 = $9,643.33

24

My trouble understanding might be that this is not very real world- 4 in 2

Bond issued at a Discount

Coupon rate 6% < Market rate at issuance 8%

	Cash	=	[Bond Payable	– Discount =]	NBP
Issue	9,485	=	[10,000	515 =]	9,485

	Cash	=	[Bond Payable	- Discount =]	NBP +	RE
2001	(600)	=		159	9,643	(759)
2002	(600)	=		171	9,815	(771)
2003	(600)	=		185	10,000	(785)
	(10,000)				(10,000)	

↑ discount left ↑

25

Bond issued at a Premium

Coupon rate 6% < Market rate at issuance 4%

- What is the present value of the bond?
- Payment stream
  - Interest payments = Coupon rate x Face Value = $600
  - Principal at maturity = $10,000
- Present Value
  - PV of cash flows discounted at the MARKET interest rate of 4%
  - PVOA (n = 3, r = 4%) x $600 = 2.77509 x 600 = $1,665
  - PV of (10,000, n = 3, r = 4%) = 0.88900 x 10,000 = $8,890
  - Total = $10,555
  - Bond Payable $10,000
  - Plus Premium 555 extra expense
  - Net Bond Payable $10,555

26

Bond issued at a Premium

Coupon rate 6% < Market rate at issuance 4%

these are the ones that are wrong though

- At Issuance

Dr Cash	10,555	
Cr Premium on Bond Payable		555
Cr Bond Payable		10,000

- At the end of first year
  - Interest expense
    - Net Bond Payable x 4%
    - $ 10,555 x 4% = $422 (work)

Dr Interest expense	422	
Dr Bond Premium	178	
Cr Cash		600

- Net Bond Payable = $10,555 - 178 = $10,377 (what's left)

27

Bond issued at a Premium

Coupon rate 6% > Market rate at issuance 4%

why does this change?

	Cash	=	[Bond Payable	+ Premium =]	NBP
Issue	10,555	=	[10,000	+ 555 =]	10,555

	Cash	=	[Bond Payable	+ Premium =]	NBP +	RE
2001	(600)	=		(178)	10,377	(422)
2002	(600)	=		(185)	10,192	(415)
2003	(600)	=		(192)	10,000	(408)
	(10,000)				(10,000)	

↑

again premium stays on balance sheet

28

Review

- effective market rate (r%) can be > = < *coupon rate* (C%)
  - par bond: effective rate = coupon rate
  - Discount bond: effective rate > coupon rate
  - Premium bond: effective rate < coupon rate
- cash payment can be > = < interest expense
  - par bond: cash payment = interest expense
  - Discount bond: cash payment < interest expense
  - Premium bond: cash payment > interest expense

29

ans from prof on slide 31 matches

Review

If bonds sell at a premium, the market rate of interest must be?

a. Equal to the stated interest rate.
b. Greater than the stated interest rate.
c. Less than the stated interest rate.
d. Cannot be determined from the information given.

30

Review

If bonds sell at a premium, interest expense will be more than cash interest paid (T or F).

F

31

Review

The amount of interest paid by a firm on its bonds payable is equal to?

a. The carrying value of the bonds times the market rate of interest.
b. The carrying value of the bonds times the stated rate of interest.
c. The face value of the bonds times the market rate of interest.
d. The face value of the bonds times the stated rate of interest.

32

Accounting for a Mortgage

- In a mortgage, you make equal payments each period until maturity
- Each payment represents interest & some principal repayment
- PV of an ordinary annuity of three payments = $10,000
  - N = 3, r = 6%, Table 4
  - $10,000 = PVOA (n= 3, r = 6%) x Mortgage Payment
  - Mortgage Payment = $10,000/2.67301 = $3,741.10

33

Accounting for a Mortgage

- At the time of the mortgage

Dr Cash	10,000	
Cr Mortgage Payable		10,000

- Periodically thereafter until maturity
  - Cash mortgage payment equals
    - Interest expense = Outstanding mortgage balance x Market interest rate
    - The excess of mortgage payment over interest expense reduces the Mortgage Principal balance
  - For example, at the end of the first year

Mortgage payment	$3,741
Interest expense .06 x10,000	600
Principal Payment	$3,141

So adjust both

34

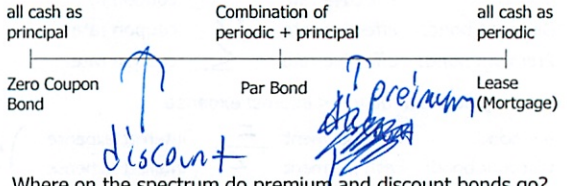
Accounting for a Mortgage

	Cash	=	Mortgage Payable
Signing	$10,000	=	$10,000

Payments	Cash	=	Mortgage	+	Ret Earnings (via interest exp)
2001	(3,741)	=	(3,141)		(600)
EB01	6,859				
2002	(3,741)	=	(3,329)		(412)
EB02	3,530				
2003	(3,741)	=	(3,530)		(211)
EB03	0				

35

Liability Spectrum



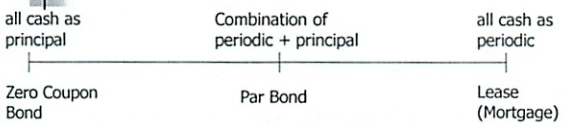
Where on the spectrum do premium and discount bonds go?

Part of return is ↑ in principal (along w/ coupon payment)

I don't really get

36

Liability Spectrum (cont'd)



Total CF = Principal + interest

Early Retirement of Debt

- When bonds are retired before maturity, it is necessary to
  - Eliminate the carrying value of the bonds (i.e., bond payable plus the premium or minus the discount) at the redemption date
  - Record the cash paid
  - Recognize the gain or loss on redemption

Early Retirement of Debt

You repurchase Zero-Coupon bonds (Face Value = $ 11,190) in the open market at the start of 2002 (2 years to maturity) when the market rate is 5%.

What is the market price of the bonds at that time?

$PV_0 = FV_n / (1+r)^n$

$PV_0 = 11,190 / (1.05)^2 = 10,150$

What is the effect on the BSE and financial statements?

Cash (A)	=	Bond Principal	-	Discount	+	RE
BB		11,190	-	1,310		
-10,150		(11,190)		(1,310)		(270)

The gain or loss on early retirement of debt is reported as an **extraordinary item** on the income statement.

Early Retirement of Debt

- Why was there a loss on the preceding retirement of debt?
- What happened to interest rates since the bond was issued?
- Did the retirement really cause the loss?

Earnings management & Debt retirement

- Firms continually issue bonds
- They have many vintages of B/P outstanding
- Some have risen in value
- Some have fallen in value
- Firms pick which bonds to retire
- Manage income by choosing to recognize gains or losses

Debt covenants (TCBY)

- Borrower will at all times maintain
  - a ratio of Current Assets to Current Liabilities ... that is greater than 2.0...
  - a Profitability ratio greater than 1.5 ...[defined as] the ratio of Net Income for the immediately preceding period of 12 calendar months to Current Maturities of Long Term Debt ...
  - a Fixed Coverage Ratio greater than 1.0 ... [defined as] the ratio of Net Income ... plus noncash Charges to Current Maturities of Long Term Debt ... plus cash dividends ... plus Replacement CapEx of the Borrower
- [Borrower will not]
  - sell, lease, transfer, or otherwise dispose of any assets ... except for the sale of inventory ... and disposition of obsolete equipment ...[to] repurchase the stock of TCBY
- [Borrower agrees
  - it will not take on new loans if] the aggregate amount of all such loans ... would exceed 25% of the consolidated Tangible Net Worth of the Borrower...

Bonds - Financial statements

- **Balance sheet**
  - Current portion of L-T debt in current liabilities
  - Long-term debt
- **Income Statement**
  - Interest expense
- **Indirect SCF**
  - Operations - interest accruals not yet paid, amortization of discount/premium
  - Investing - purchase / sale of available for sale debt
  - Financing - proceeds, repayment + supplemental disclosure of cash paid for interest

43

Debt - Footnote Disclosures

- Fair market value of outstanding bonds payable
- Annual (cash) principal repayments for next 5 years
- Cash interest paid for the year (not necessarily = interest expense)

44

Chap 8 Reporting + Analyzing Liabilities

Reading

11/3

Verizon is the example co.
it has a lot of debt + pension liabilities
liabilities are 1 of 2 ways of financing
- investment / shareholders are other

Assets = Liabilities + Equity
↑ investment/use of funds

Companies want to finance at the lowest possible cost
↳ must be astute in raising those funds

Most Current liabilities (accounts payable + accrued liabilities) are non-intest bearing so companies want to maximize those

Current → due within a year
↳ not good at financing long-tem assets

Companies like financing lenght to match asset lenght

long term: usually bonds, notes, stock issuence

financing assets w/ liabilities = financial leveraging
= higher debt costs
= higher risk of default
So investors demand higher rate of return comserate w/ risk

this chap on on-balance sheet financing
- hiding asset + liability off balance sheet = chap 9

(2) Current Liabilities

due within 1 year

- debt maturing within 1 year
- accounts payable + accrued liabilities
- liabilities related to assets for sale
- other → cust deposits, dividiands declared but not paid, etc

- accrued liabilities - no related external transaction in current period, ie wages accrued (but not paid)
- debt includes short-term bank borrowing (inc interest)
  current maturities of long term debt " "
- accounts payable - not interest-bearing so good financing source
  ↳ aka interest free financing
  - but must not over do it → "leaning on the trade"
- accrued liabilities (why is this the 3rd time book mentioned?)
  ↳ Vacation pay, wages, interst payable, taxes payable, etc
  - employees who have worked, but have not been paid
    (this book is so repetitive)
  - but some less certain than others
  - must record if obligation is profitable and amt is estimatable
    ↳ called contingent liability
  - if reasonably possible, just put in foot notes
  - otherwise can, but don't have to mention it

(3) If timing is wrong RE can be larger than should be

Estimation of restructuring programs, legal + environmental liabilities + acquisitions are often not accrued correctly
- over estimate liabilities now, to reduce future ↓ income
- like if new management wants to show earnings growth later
- "taking a big bath" "clearing the decks"
- can be reversed for "cookie jar reserves"

GAAP requires estimation of warentees
- when product repaired expense reported + liability ↓
- management needs to update estimate
- hard to estimate
- so easy to game

Current Non-Operating (Financial) Liabilities

- short term bank loans, accured interest, current maturities of long term debt
- need permanent (and many have seasonal) working capital
- part in accounts payable
- or in short-term intrest-owed debt
  - aka bank lines of credit
  - interest paid/accured = expense (comes out of RE)
  - must report interest accrued even if have not paid when it issues its balance sheet

(4) Current maturities of long-term debt

(I am not writing this again, book very repetitive)

Long Term Liabilities

- Small amts can come from banks, insurance companies, etc
- Large amts → issue bonds + notes in capital market
- principal/face amt - paid at maturity
- interest payments in intrem
- Work w/ underwriter to set terms + issue (for fee)
- retirement plans + insurance companies buy them
- once sold can be traded in secondary market
  - principal/interest fixed
  - but bonds compete w/ other possible investments
  - financial condition of borrowing company important

(book explains better than lecture)

Pricing of Debt

- Capon/contract/state rate - rate of interest payments to bond holders
- Market/yield rate - interest rate investors expect to earn on investment for this debt security - used to price bond issue

(5)

The 2 rates are almost always different

Coupon rate fixed at bond issue

Market rates fluctuate w/ supply + demand in marketplace
+ general economic conditions

Bond price exceeds the P.V. of expected cash flows to bond holders

Bond holders get 2 cash flows
1. Periodic interest payments - annuity
2. Single payment of principal at bond maturity

(not going through each example)

discount - Coupon rate below what investors demand
bond sells at discount
(who gets the discount)

premium - Coupon rate above investor demand
- bond more desirable
- sells at a premium

announcement of a bond = tombstone

effective cost ~~interest~~
- when sold at ~~par~~ par → effective cost is only the interest payment
- when sold at a discount record both cash interest payment and the discount
? is recognized as an expense

(6)

When sold at a premium → cash interest paid
+ Cost reduction due to premium recieved

- a reduction of interest expenses
- so effictive cost is less than at par
  ↑ of bond

Bonds are priced to meet return/market rate demanded by investors
effictive rate always = yield / market rate demanded by investors despite coupon rate
(think starting to understand – manipulate discount/preimum to effictive rate = market rate)

Reporting Debt Financing

- at par just write
- discount – record at proceeds recieved
  - record discont as expense
  - Must report on balance sheet
  - Over time discount falls to 0 "amortization"

  effictive intest rate greater than coupon rate
- premium – again premium = benefit

Zeros

- no capon rate, just PV of principal at maturity
- So sold at a deep discant
- ie 10,000 in 10 years (6% interst rate)
  So PV is $15,536 (what it is sold at)

(7)

Effects of Discants + Premium Amortization

Cash interest paid	Cash interest paid
+ Amortization of discount	− Amortization of discount
Interest expense	Interest expense

↑ periodic amortization of discount added

interest cost reflects effective cost of debt

vs nominal cost of debt is cash interest paid

companies amortize discounts/premiums using effective interest method

(skipping example)

Effects of Bond Repurchase

- Companies report bond ~~purchases~~ payable at historical (adjusted) cost
- So once issued follow from amortization table - do not subsequently change
- but once sold bonds are free to trade in secondary Markets b/w bond holders
- the yield rate (used to compute bond prices) changes w/ econ + perceived creditworthyness of issuer

(8)

Companies can repurchase/redeem bonds before maturity
- if bond indenture/contract agreement includes call provision

Or can repurchase on open market

Gain/loss on bond repurchase = Bonds payable, net − Repurchase payment

Net bond payable = book/carrying value
↳ net amt reported on balance sheet

if issuer pays more than book value to repurchase a bond = loss

GAAP requires reporting as ordinary income
but not part of operating income

Financial Statement Footnotes

report long term amts → amt, due dates, rate
+ breakdown

interest income + expenses are non-operating
- not included in net operating profit

Financial Statement Analysis

Debt to Equity (D/E)

$$\frac{\text{total liabilities}}{\text{total stockholders equity}}$$

measures firm's financial leverage

(9)

Times Interest Earned (TIE)

EBIT ← earning before interest + taxes

Interest Expenses

Operating Cash Flow to Liabilites (OCFL)

Net cash flow from operations

total liabilites

↑ SE - Assets

all try to reflect company's credit risk exposure

Debt Ratings + Cost of Debt

debt ratings establish credit quality + creditworthiness

try to show default risk

factors

- ideatry characteristics
- competive position
- management
- financial charasteristics
- financial policy
- profitability
- capital structure
- cash flow protection
- financial flexibility

- use the accounting ratios

(10)

Collateral - can provide extra security

Covenants - restrictions to protect debt holders
ie excessive dividend payments
min liquidity + solvency ratio's
since have no voting rights

Optins - ie to convert debt into stock
or repurchasing before maturity
(oh 8A does valuation)

Leases, Pensions + Taxes

Chap 9 Reading

11/6

Southwest is larges airline by pax boarded
point to point and single aircraft type
but growth slower
leases aircraft + has pension + pays income tax

Off balance sheet financing - financial obligations not reported as liabilites on balance sheet
Or only as notes
makes balance sheet look healthier
like LIFO + noncapitalized intangable asset are how assets can be hidden
reduces debt reported
So lowers financial leverage ratios
Or remove both asset + liability.
to improve operating ratios

Leases

Owner of asset = lessor
User of asset = lessee
private contract governed by comercial law
can be any type of party

(2)

lessee
~~lessor~~ get unrestricted right to use asset by making
periodic payments and maintaining asset
title remains with ~~lessee~~ lessor
at the end of the lease the asset is returned or purchased
at the agreed upon price
lessor sets rate to get a return on investment
its a financing vehicle — like a secured bank loan
except:
leases require less equity investment because banks usually
~~banks~~ only loan <u>part</u> of the asset's cost
lease terms can be structured multiple ways -
seasonal ~~or~~ or graduated payments for example
lessee may use asset for <u>part</u> of useful life
so does not need to arrange for asset's sale
tax benefits for lessor that they can pass on
if properly structured <u>not</u> on lessee's balance sheet

<u>Lessee Reporting</u>

2 methods allowed by GAAP:

<u>Capital lease method</u> - lease asset + liability on
balance sheet - depreciated like other long term assets
↑
amortized like debt - seperated by interest + principal

(3)

Example 5 year lease 10,000/year 7% interest rate market ??

- both recorded at PV + asset +41,002 + liability +41,002
- then each year
  - depreciate asset − asset −8,200 − RE −8200 + depreciation expense +8,200
  - pay lease as interest − Cash −10,000 − liabilitie −7,130 − RE −2870 + interest expense +2870

Operating leases

neither asset nor liability on balance sheet
lease payments are recorded as rent expense when sold

each year pay rent − cash −10,000 − RE −10,000 + rent expense +10,000

Comparison

both have same total expense
Capital method has higher expenses up front

When Capitalize - must if 1 or more condition met

1. Lease auto transfers ownership to lessee at lease end
2. Or allows a bargin purchase option (ie #1)
3. Lease term is ≥ 75% useful life of asset
4. PV of lease payments ≥ 90% assets fair market value

(4)

Managers perfer the operating lease
strict rules on reporting leases
- managers try to game rules

Footnote Disclosures of Leases

Break down capital + operating leases for each year
Say what lease terms are
- renewable? what. rate? what term?
- purchase price? what rate?

Similar to disclosures of long-term debt
We want to know the company's future req. payments

Cashflows

no effect on cash flows
getting lease = material non cash transaction -
- does not go under investing or Financing

Capitalization of Operating Leases

if don't capitalize!
asset turnover ratios overstated
financial leverage ratios understated
Net operating profit margin (NOPM) understated
- since interest is a non operating cost

cash flows from operations ~~higher~~ lower - principal is financing under capital

(5) - makes ROE appear higher

- but lease disclosure is req. so we can add operating leases back in

1. Determine the appropriate discount rate
   - ↳ from looking at companies capital lease rate
   - ↳ use rating agency info
   - ↳ look at companies secured debt
2. Compute the PV
3. Include this PV as both a lease asset + liability

When you add these back in Southwest looks less healthy

Pensions

2 types of plans < defined contribution
defined benefit

defined contribution

Company makes payment to employee's account
Usually a tax-advantaged 401(k) account
Simply an expense when accrued/paid

defined benefit

also requires company to make payments to 3rd party
employees paid based on years of service
do not have to pay full amt in to cover obligations
Need to pay min. amount however ↳ over/under funded

(6) Reporting on Balance Sheet

pension plan assets - investments in stocks + bonds
- hopefully of other companies

pension liabilities: projected benefit obligation (PBO)

difference b/w market value of plans' assets + PBO
= funded status

PBO > market value → underfunded
PBO < market value → overfunded
) companies only need to report net amt

The stocks + bonds change value over time due to
1. interest, dividends, gains, or losses
2. assets ↑ when company makes a contribution to assets
3. assets ↓ as benefits are paid to retirees

The PBO changes as it is the PV of expected benefit payments
- depends on # years employee expected to work and employee's salary level at retirement
- so must estimate future staffing + wage levels
- and when employees retire
- and how long they will live

(7) Balance in PBO changes b/c

1. as employees work, benefits ↑ = service cost
2. interest cost accrues on pension liability
   - no scheduled interest payments so it just accrues
3. PBO can ↑/↓ due to actuarial ~~losses~~ gains/losses
   or changes to assumptions
   - wage inflation
   - termination + mortality rate
   - discount rate
4. Payments ↓ PBO

If overfunded, then pension reported as an asset "prepaid pension cost"

If underfunded → liability

in 2000, low discount rates + bear markets made most pensions underfunded - 90% underfunded

Income Statement Effects

Service Cost
+ Interest Cost
− Expected return on pension plan assets
± Amortization of deferred ~~losses~~ amts
Net Pension expense

(8)

net pension expense part of SG+A
- disclosed in foot notes
- used expected rate of return to provide income stability
- difference expected + actual set aside in footnotes as deffered amt
  - when exceeds certain limits must be on balance sheet + amortized
- service cost → operating expense
- interest cost → financing cost

Foot note disclosures

GAAP requires extensive disclosures w/ what we talked about
most analists cont entire amt as operating when can't split
↳ reported in SG+A
and if can't split amortization → all non operating
Must report expected future contributions
- needs to make contributions if investments don't perform well (easy)
- can make investments from cash flow (instead of R+D)
  or with borrowed $
  ↳ GM borrowed so much it was downgraded to junk
- managers have a lot of control in estimation
- affects profitability that year

(9) Other Post Employment Benefits

- OPEB (Other post employment benefits)
  - health care and insurance
  - provide them "pay as you go"
    - liability = APBO (accumulated post employment benefits)
    - usually totally unfunded - so no investment returns
  - hard to estimate healthcare costs
  - usually can be terminated at any time
  - big at GM + AA

Tax Expense + Deferred Taxes

Income Tax Expense

- operating expense
- function of net income
- effective tax rate = $\frac{\text{tax expnse}}{\text{net income}}$
- companies maintain 2 sets of books
  - financial statements / GAAP
  - tax / IRS
  - different objectives
- taxable income on tax return different than income statement
- IRS functions basically under cash basis
- So temporary difference + permanent differences

so record Deferred Tax Liability on balance sheet
when taxable income < financial reporting income

differences occur
- long-term contracts
- depreciation (MACRS) ← largest

or could have Deferred Tax Asset
- temp. overpaid taxes
- as you accrue the income this dissapers
- uncollectable accounts recievable
- warranty costs
- some pension expenses

-Some of the difference is due to state taxes

Computation + Analysis of Taxes

tax expense = tax obligation − change in deferred tax assets/liabilities

Need to be careful of ballooning deferred taxes

Chap 10 Stockholders' Equity Reading

11/5

Pfizer R+Ds drugs + sells them
drug patent protections are running out
it buys companies to spread out fixed cost
needs a lot of capital
- more than just from operating activities
So it issues stock

---

remember companies can finance assets from borrowing from creditors or obtaining funds from shareholders
large companies split this half + half
records the sale of shares
↳ at historical cost
↳ so fluctuations in market value do not affect companies' books
subsequent sales b/w 3rd parties are un-reported
if company repurchases shares, SE ↓
↳ not a "gain or loss"
breaks down into 2 categories: contributed + earned capital

Contributed Capital

from issuing stock inc common stock, preferred stock, + add. paid in capital
- treasury stock, amt to repurchase shares - proceeds

(2)

Common stock – primary ownership of corp

must report

# of shares authorized
- can only be ↑ through shareholder vote

shares issued

shares outstanding = # shares issued − # shares repurchased as treasury stock

par value – arbitrary amount
- no fin statement effects
- only minor legal
- splits common stock + add. paid in capital on balancesheet

Pertered Stock – have som preference

dividend preference – get dividends 1st ↙ can be attractive in tax rates
- some have cumulative provision – previous years skipped dividend payments must be repaid

liquidation preference – if company fails creditors paid back 1st
- prefered shares paid back in full before common shares

converson feature – yield on pertered stock w/ cumulative
- feature is similar to interest on a bond or note
- fixed yield can limit upside potential return
- so can convert to common stock
- sometimes company allowed to force conversion

(3)

participation feature - allows shareholders to share ratably w/ common stock holders when there is a dividend. removes limitation when companies dividends are high

(I do not fully understand)

Accounting for Stock Transactions

Stock Issuance

+ assets

+ SE
↳ break down the par value is "common stock" rest is "add. paid in capital"
↑ usually the majority

then stock is traded on market
- balance sheet unaffected
- so can't get market value of the company from that

Share Repurchase (why?)

- will do if feels market undervalues them
- this sends positive message about health of company
- ~~that~~ ↑ share price
  - allows company to later resell shares for a "gain"
    ↳ in additional paid in capital
    - never income

- or to offset dilutive effect of employee stock option program (ESOP)
  - to keep outstanding shares constant

(4)

RE

-cash — treasury stock

↑ Contra account

so Contrib account −
as treasury stock +

when shares resold

+ cash + treasury stock
+ add. paid in Capital

use FIFO to decide which shares are resold

Earned Capital

represents cumulative profit retained by company

income ↑ E.C
losses ↓ E.C.
dividends ↓ E.C.

Dividends can be paid in land or stock.

includes accumulated other comprehensive income (AOCI)

↑ (which is what?)

effects of repurchasing

1. ↑ EPS — numerator dampened − cash used
   denom ↑ = less shares
2. Repurchase + resale could be best means of investment - if undervalued
3. Sends strong signal to investors
   - not empty press release

but diverts cash from other investments
- bothersome if investments mutually exclusive now. or in future

(5) Cash dividends

most companies, not all, pay dividends
fund from cash flow + borrowing
dividends thought to match expected core long-term income
dividend ↑, increase share price a lot

-Cash

-RE
Contrib Capital

usually viewed as health of corp
some say should never ↓ dividends, others say they are low priority to be paid

Stock dividends + Splits

Stock dividends #

-RE
↑
amt RE↓ depends on proportion of outstanding shares distributed to the total outstanding shares on issue date

+ Contrib Capital

% of outstanding shares distributed	RE	Contrib capital
< 20-25% small	↓ Market value of shares	Common stock ↑ by par value add. shares ↑ add. paid in ↑ the rest
> 20-25% large	↓ par value of shares	↑ par value

(6)

for large stock splits no effect on add. paid in capital b/c dividend ~~reported~~ reported at par value

Ownership percentage of common stock holders is unchanged

Need to report before + after EPS

Stock Splits

- similar to share dividend
- ownership % remains unchanged
- no financial statement effects
- many states require par value to be adjusted as well
  - if does not require that called stock split effected in the form of a dividend

Cash Flow Statement

	cash
- issuance of capital stock	↑
- acq. treasury stock	↓
- sale " "	↑
- cash dividend paid	↓
- stock split	—) cash short but must pay dividend
- stock dividend	—)

(7) Comprehensive Income

more inclusive notion of performance than net income
includes changes in equity

= net income + add. gains + losses not on income statement
↓
other comprehensive income
= foreign currency
unrealized gains/losses on availble for sale securities
+derivitives
adjustments to pensions + other benefit plans

not closed after each period but carried on as AOCI

Summary of SE

- table shows key transactions

book value per share

$$= \frac{SE - \text{perfered stock dividend}}{\text{Common shares atstanding}}$$

(8) Earnings Per Share (EPS)

$$EPS = \frac{\text{Net income} - \text{Perfered dividends}}{\text{Weight avg common shares}} - \text{EPS impact of dilutive options + warrants} - \text{EPS impact of dilutive Convertables}$$

basic EPS

diluted EPS

all

- Companies req. to report ~~both~~ basic
- but only diluted EPS if has Complex capital structure
  - if has certain dilutive securities outstanding
    - ↓ Stock options
      convertable debt
      convertable prefered stock
) detailed in appendix
- diluted EPS needs to include max potential reduction of its BEPS
  - ~~A~~ that could occur if conversion took place
  - value always lower (considered conservitive)
  - some perfer to use it
  - difficult to calculate - may change both numerator + denominator

also GAAP splits recurring and non recurring / extrodinary

even calculating weighted avg share is complex

- need to know when each transaction occured

# of shares varries widly

- Berkshire Hataway very few shares

11/8

Skipped class
- past notes

Leases

15.501/516 **Corporate Financial Accounting**
Fall 2010
Lecture 16

Professor Ross Watts
Sloan School of Management
Massachusetts Institute of Technology

1

Housekeeping

- Problem sets
  - PS4 due Wednesday
- Reading
  - Dyckman chapter 10, 434-446
- Exam
  - 11/17
  - Cover through lecture 17
- Today's slides
  - Available on Stellar

2

Early Retirement of Debt

- When bonds are retired before maturity, it is necessary to
  - Eliminate the carrying value of the bonds (i.e., bond payable plus the premium or minus the discount) at the redemption date
  - Record the cash paid
  - Recognize the gain or loss on redemption

3

Early Retirement of Debt

You repurchase Zero-Coupon bonds (FaceValue = $ 11,190) in the openmarket at the start of 2002 (2 years to maturity) when the market rate is 5%.

What is the market price of thebonds at that time?

$PV_0 = FV_n / (1+r)^n$
$PV_0 = 11,190 / (1.05)^2 = 10,150$

What is the effect on the BSE and financial statements?

Cash (A)	=	Bond Principal	-	Discount	+	RE
BB		11,190	-	1,310		
-10,150		(11,190)		(1,310)		(270)

The gain or loss on early retirementof debt is reported as an **extraordinary item** on the income statement.

4

Early Retirement of Debt

- Why was there a loss on the preceding retirement of debt?
  The market value of the debt > the book value
  MV = $10,150
  BV = $11,190-1,310= $9,880
- What happened to interest rates since the bond was issued?
  Decreased
  Interest rates dropped from 7% at time of issuance to 5% so debt is worth more
- Did the retirement really cause the loss?
  No, the value of the liability had already increased

5

Earnings management & Debt retirement

- Firms continually issue bonds
- They have many vintages of B/P outstanding
- Some have risen in value
- Some have fallen in value
- Firms pick which bonds to retire
- Manage income by choosing to recognize gains or losses

6

Debt covenants (TCBY)

- Borrower will at all times maintain
  - a ratio of Current Assets to Current Liabilities ... that is greater than 2.0...
  - a Profitability ratio greater than 1.5 ...[defined as] the ratio of Net Income for the immediately preceding period of 12 calendar months to Current Maturities of Long Term Debt ...
  - a Fixed Coverage Ratio greater than 1.0 ... [defined as] the ratio of Net Income ... plus noncash Charges to Current Maturities of Long Term Debt ... plus cash dividends ... plus Replacement CapEx of the Borrower
- [Borrower will not]
  - sell, lease, transfer, or otherwise dispose of any assets ... except for the sale of inventory ... and disposition of obsolete equipment ...[to] repurchase the stock of TCBY
- [Borrower agrees
  - it will not take on new loans if] the aggregate amount of all such loans ... would exceed 25% of the consolidated Tangible Net Worth of the Borrower...

7

Bonds - Financial statements

- **Balance sheet**
  - Current portion of L-T debt in current liabilities
  - Long-term debt
- **Income Statement**
  - Interest expense
- **Indirect SCF**
  - Operations - interest accruals not yet paid, amortization of discount/premium
  - Investing - purchase / sale of available for sale debt
  - Financing - proceeds, repayment + supplemental disclosure of cash paid for interest

8

Debt - Footnote Disclosures

- Fair market value of outstanding bonds payable
- Annual (cash) principal repayments for next 5 years
- Cash interest paid for the year (not necessarily = interest expense)

9

Debt - Footnote Disclosures

- Fair market value of outstanding bonds payable
- Annual (cash) principal repayments for next 5 years
- Cash interest paid for the year (not necessarily = interest expense)

10

Agenda - Leases

- Nature of leases
- Rationale for leasing
- Distinction between *operating* & *capital* leases
- Different effects of *operating* & *capital* leases on lessee's
  - Income statement &
  - Balance sheet
- Off-Balance Sheet financing
- Ratio analysis of liabilities

11

The Nature of Leases

- A lease is an agreement
  - conveying the right to use property, plant, or equipment
  - usually for a stated period of time
  - in exchange for periodic cash payments
- The owner is the lessor, the renter is the lessee
- Somewhere between renting & buying

12

The Nature of Leases

- Two types of leases
  - **Operating lease:**
    - Usually short-term and allows the lessee to use the leased property for only a portion of its economic life.
    - The economic equivalent of a rent transaction.
  - **Capital lease:**
    - Longer-term leases that effectively transfer all the risks and rewards of the leased property to the lessee (sale transaction).
    - The economic equivalent of sales with financing arrangements - the lessee buys the asset using a loan provided by lessor.

13

Economic substance of leases

Lease

Rent — Purchase

- Operating lease
  - Lessee rents the property
  - Lessee accrues rent expense
- Capital lease
  - Lessee economically owns the property
  - Lessee records on the balance sheet
    - the leased asset (i.e. capitalizes the asset) &
    - the corresponding lease obligation

14

Economic Rationale for Leases

Operational advantages to the lessee:

- Leasing provides some protection against obsolescence.
- Leasing ready-to-use equipment may be more attractive if the asset requires lengthy preparation and set-up.
- Leasing avoids having to own the asset that will be required only seasonally, temporarily or sporadically.

Note on advantages

- Lessee will have to pay for these advantages unless the lessor has some advantage that reduces costs

15

Economic Rationale for Leases

Financial advantages to the lessee

1. Leasing often provides 100% financing & potentially more favorable rates
2. Leasing may provide fewer restrictions than other forms of financing
3. Properly structured leases may be "off-balance sheet", avoiding restrictions set by bondholders that prevent firm from taking on additional debt (i.e., debt covenants).
4. Leasing allows tax advantages of ownership to flow to the party best able to use them.

Note on advantages

- Lessee will have to pay for advantages 2 & 3 unless the lessor has some advantage that reduces costs

16

Accounting for Operating Leases

- Recorded as rental of an asset in financial statements
- When lease agreement is signed & lessee begins to use asset, no entry is made
- As lease payments are made, cash is reduced & retained earnings are reduced (lease expense)

17

Lease Capitalization Criteria

A lease is a capital lease if **ANY** of the following conditions are met:

1) Transfer of ownership at end of lease term
2) Existence of bargain purchase option - payment below fair market value after lease term
3) Minimum present value of lease payments (including bargain purchase, if any) at least 90% of asset's market value
4) Lease term is at least 75% of asset's useful life

18

Accounting for Capital Leases

- Recorded as an asset acquisition with 100% debt financing in financial statements
- When lease agreement is signed & lessee begins to use asset, present value of lease payments is recorded as asset & corresponding liability
- During the lease term:
  - Cash reduced as lease payments are made
  - Lease asset depreciated => depreciation expense
  - Interest incurred on lease obligation => interest expense

19

Accounting for capital leases --Lessee's Books

Initial recording of a capital lease
Asset acquisition with a 100% debt financing

Dr Leased Property (A) PV of lease
Cr Lease Obligation(L) PV of lease

Recording of payments during the lease

	Cash + Leased Property - Acc. Depr. =	Lease Obligation(L) +	RE (OE)
1.	- PP	- (PP - Int. expense)	-Int. expense
2.	+Depn		- Depn Expense

Present Value of Lease	= (PVA, n, r%) * PP
PP	= Periodic lease payment
Int. expense	= Beginning of period lease liability * r%,
Beginning lease liability	= present value of remaining payments at r%
Depn. Expense	= depreciation expense

20

Operating vs. Capital Lease

- GE Capital leases airplane to Delta Airlines
  - Airplane has current value of $30,000K, expected useful life of 20 years, & zero salvage value
  - Assume Delta has borrowing rate of 16%
  - Annual lease payments are $5,060K
    - PV annuity factor (r=16, n=20) is 5.929
    - $30,000/5.929 = $5,060

21

Operating Lease

Year	Cash	=	RE
1	-5,060		-5,060
2	-5,060		-5,060
3	-5,060		-5,060

Annual Rent expense

22

Capital Lease

Cash	Leased Asset	Acc. Dep.	=	Lease Obligation	RE
	+30,000			+30,000	

Present value of lease payments at signing

23

Capital Lease

	Cash	Leased Asset	- Acc. Dep.	=	Lease Obligation	RE
		+30,000			+30,000	
Yr. 1	5,060		-260			-4,800
			1,500			-1,500

Year 1 decrease in lease obligation
-5,060 - -4,800

Year 1 interest expense
(30,000) * 16%

Year 1 depreciation expense
(30,000 - 0) / 20

24

Capital Lease

	Cash	Leased Asset	- Acc. Dep.	=	Lease Obligation	RE
		+30,000			+30,000	
Yr. 1	-5,060				-260	-4,800
			-1,500			-1,500
Yr. 2	-5,060				-302	-4,758
			-1,500			-1,500

Year 2 decrease in lease obligation
-5,060 - -4,758

Year 2 interest expense
(30,000 - 260) * 16%

25

Capital Lease

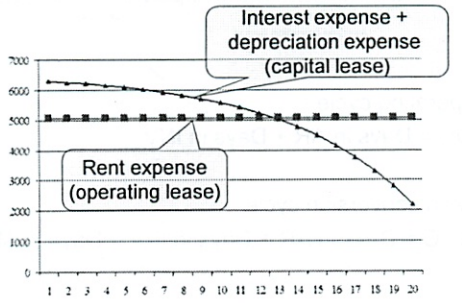
	Cash	Leased Asset	Acc. Dep.	=	Lease Obligation	RE
		+30,000			+30,000	
Yr. 1	-5,060				-260	-4,800
			-1,500			-1,500
Yr. 2	-5,060				-302	-4,758
			-1,500			-1,500
Yr. 3	-5,060				-350	-4,710
			-1,500			-1,500

Year 3 decrease in lease obligation
-5,060 - -4,710

Year 3 interest expense
(30,000 - 260 - 302) * 16%

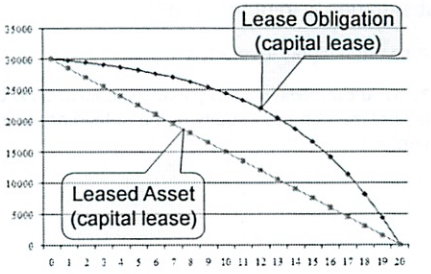
26

Operating vs. Capital Leases Income Sheet Effect



27

Operating vs. Capital Leases Balance Sheet Effect



28

Capital vs. Operating Leases – Financial Statement Effects on Lessee

- The most significant financial statement differences between capital & operating leases are on the Balance Sheet
  - Capital leases are recognized on the B/S
  - Operating leases are not
- There are also differences between capital vs operating leases in their effects on the Income Statement & Statement of Cash Flows
  - *Income Statement*:
    - the expense of an operating lease is the periodic cash (rental) payment
    - the expenses for a capital lease are depreciation + interest.

29

Capital vs. Operating Leases – Financial Statement Effects on Lessee

- If a firm structures leases to obtain off-balance sheet financing, you can use required disclosures to capitalize operating leases for financial analysis purposes
  - See pp. 442-445 of text
- Such adjustment may be necessary to compare two firms in the same business, one using off-balance sheet financing in the form of operating leases & one not

30

Off-Balance Sheet Debt

- Many firms that operate in debt intensive industries, such as energy, communication & airline, try to keep debt off the balance sheet
  - Construct deals so as to avoid reporting debt/liabilities
- Several forms of off-balance sheet financing:
  - Operating leases (vs. capital lease)
  - Special purpose entities (SPEs)
  - Equity method vs. consolidation of subsidiaries & joint ventures

31

Off Balance Sheet Investments

- SPE
  - Entity set up for specific, finite period, activity
  - Often highly leveraged (ratio of debt/assets)
  - Used for sub-prime securities (D/A typically 94-97%)
  - Outside owner had to bear substantial risk
    - De facto implementation required o/s equity owner have equity = 3% of total assets (all, or at least greater than half, the equity)
  - FAS 166 which impacts financial reports beginning in 2010 eliminated the concept of a qualified SPE

32

Off Balance Sheet Investments

- Subsidiaries & joint ventures
  - Also often highly leveraged
  - To avoid consolidation of a parent must have 50% or less of the common equity of the subsidiary or joint venture

33

Ratio Analysis of Liabilities

Operating & Cash conversion cycles

Lecture 8
Average collection period

Lecture 11

- Operating cycle
  OC = Days in AR + Days in INV
- Cash conversion cycle
  CCC = Days in AR + Days in INV – Days in AP

New

The more positive the CCC, the more likely a liquidity crisis

34

AP Turnover Ratio =

$$\frac{\text{Purchases}}{\text{Average AP}}$$

An indication of how quickly a company pays its suppliers

35

Days in AP =

$$\frac{365 \text{ days}}{\text{AP Turnover Ratio}}$$

Measures average number of days to pay suppliers

36

A/P TO & Days in A/P: Apple

Selected financial information for Apple Computer, Inc for FY 2006 and FY 2005 (in $ millions):

	Apple	
	FY 2006	FY 2005
Inventory	$270	$165
A/P	$3,390	$1,779
Sales	$19,315	$13,931
Cost of Sales	$13,717	$9,889
Net Income	$1,989	$1,328

Compute A/P Turnover and Days in A/P

37

A/P TO & Days in A/P: Dell

Selected financial information for Dell, Inc for FY 2006 and FY 2005 (in $ millions):

	Dell	
	FY 2006	FY 2005
Inventory	$576	$459
A/P	$9,840	$8,895
Sales	$55,908	$49,205
Cost of Sales	$45,958	$40,190
Net Income	$3,572	$3,043

Compute A/P Turnover and Days in A/P

38

A/P TO & Days in A/P: Apple vs. Dell

	A/P Turnover
Apple	5.35 = (13,717 + 270 - 165) / [0.5 * (3,390 + 1,779)]
Dell	4.92 = (45,958 + 576 - 459) / [0.5 * (9,840 + 8,895)]

	Days in A/P
Apple	68.2 = 365 / 5.35
Dell	74.2 = 365 / 4.92

Both firms have considerable financing of working capital via A/P

39

Operating cycle and CC cycle

- Dell
  - OC = days in AR + days in INV
  - OC = 25.0 + 4.1 = 29.1
  - CCC = days in AR + days in INV – days in AP
  - CCC = 25.0 + 4.1 – 74.2 = -45.1
- Apple
  - OC = days in AR + days in INV
  - OC = 20.3 + 5.8 = 26.1
  - CCC = days in AR + days in INV – days in AP
  - CCC = 20.3 + 5.8 – 68.2 = -42.1

Both firms' CCC ratios suggest they are notlikely to have liquidity problems

40

Times Interest Earned

$$\text{Times interest earned} = \frac{\text{Income before income taxes and interest expense}}{\text{Interest expense}}$$

Indicates the company's ability to meet interest payments as they come due.

41

Times Interest Earned - Example

- Company ABC's profit before interest and taxes is $22, 000 and its interest expenses are $10,000:
- TIE Ratio = $22,000 / $10,000 = 2.2
- It shows that your business is earning the interest charges two or more times each year.

42

Michael Plasmeier

11/10

15.501/15.516
Corporate Financial Accounting
Problem Set #4
Fall 2010
Due November 10th in class

IMPORTANT INFORMATION:

Please hand in a hard copy of your answers in class on the due date. **Soft copy submissions will not be accepted**. Only one copy per group is required. Maximum of three people per group. If you cannot attend class, you may drop off the problem set before the due date in Lynn Li's mail tray during business hours. The mail tray is located in E62-655.

Question 1: Property, Plant and Equipment

Diamond, Mortensen, and Pissarides (DMP) Corporation purchases a computer equipment that matches firms with the employee on January 1st, Year 1, at a cost of $130,000. The asset is expected to have a service life of 5 years and a salvage value of $10,000.

(a) Compute the amount of depreciation for each of Year 1 through 5 using the straight-line depreciation method.

(b) Compute the amount of depreciation for each of Year 1 through 5 using the double-declining balance method.

(c) The CEO, Brandon Lee, receives a bonus if the corporation reports high earnings. As a result, he always chooses the accounting method that would give him the highest salary possible. First, he must decide whether to follow straight-line or double-declining balance method. Once he commits to a depreciation method, Brandon will not change his accounting choice. He knows that on December 31st of Year 2, the corporation will sell their equipment for $80,000. Assuming that Brandon Lee wants to receive a bonus as soon as possible, that is, in year 1, and ignoring tax issues, will he choose the straight-line or double-declining balance method? Will Brandon make the same depreciation decision if he chooses to receive his bonus in year 2? What are the accounting journal entries for the sale of the computer equipment using the accounting method that gives Brandon Lee the highest income in year 2?

(d) Assume Brandon Lee chose to use straight-line depreciation. On June 30th, Year 2, the Board members of DMP Corporation meet and decide to NOT sell the equipment as originally planned. Instead, they decided to incur maintenance of $5,000 so that the service life is extended for another 4 years (current service life + 4 years). What are the associated depreciation expenses for years 2 and 3?

Question 2: Deferred Taxes

Heck, Negishi, and Suzuki (HNS) Chemical Company uses an accelerated method of depreciation for tax purposes and straight-line for financial reporting. In 2010, HNS Chemical purchased a new asset for $1,000,000. For financial reporting purposes, it will depreciate this asset over 7 years to a salvage value of $300,000. For tax purposes, the company will depreciate the asset over 4 years to a salvage value of zero using the following annual percentages of the acquisition cost: 30%, 40%, 25%, and 5%. Net income before taxes and taxable income are otherwise the same, equaling $1,000,000 before depreciation in each year. The tax rate is 35%.

(a) What are the tax expense, deferred taxes, and taxes payable each year?
(b) HNS Chemical decided to sell the asset at the end of year 5 for $450,000. What are the associated journal entries related to this transaction? Would the same amount of gains and losses be reported to the Internal Revenue Services?

Question 3: Long-term Debt

Robert G. Edwards Corporation pioneered a technology that allows for in vitro fertilization (IVF). In the 32 years since the first "test tube baby," Edwards and his colleagues have refined IVF technology and are continuing to expand their reach. Edwards Corporation is issuing bonds this year to expand the business operations with the following transactions.

(a) Edwards Corp. first issues 1,000 10-year zero coupon bond for with face value of $1,000 per bond in exchange for $463,193.49 in cash. The CEO of Edwards Corp, Yichuan Liu, wants to know the coupon rate of the bond and the effective interest rate.
(b) Feeling that this was insufficient funds to do additional R&D, Yichuan Liu wants to issue another 10 bonds. This time, the face value of each bond is $10,000. The stated maturity is 3 years and the stated coupon rate is 5%, paid annually at the end of each year. Assuming the effective interest rate is (i) 3%, (ii) 5%, and (iii) 10% respectively, Yichuan Liu asks you to show the entries for the entirety of the bond under each effective interest rate.

Question 4: Leases

Liu Xiaobo Inc. entered into a 4-year lease agreement with Mario Llosa Corporation on January 1st, 2010. Liu Xiaobo Inc. will lease 200 laser copiers each costing $500. The copiers are expected to last for 5 years with a residual value of $100 per copier. At the end of the contract, Liu Xiaobo Inc. may purchase the laser copier at $80. (Assume that the interest rate is 5% and the company uses straight-line depreciation).

(a) Should Liu Xiaobo Inc. record the copier lease as capital lease or operating lease? Why?
(b) What are the journal entries if Liu Xiaobo Inc. treated the lease as a capital lease?
(c) What are the journal entries if Liu Xiaobo Inc. treated the lease as an operating lease?

15.501 P-set 4

11/7

1. PPE. DMP corp

Buy 130,000 computer
5 year life,
10,000 salvage value

a) Straight line depreciate

Base = Cost − Salvage value = 120,000

Rate = $\frac{1}{\text{useful life}} = \frac{1}{5} = 20\%$

Each year depreciation = $\frac{1}{5} \cdot 120{,}000 = 24{,}000$

b) Double Declining Balance

↓ Rate = 2 · Standard rate = 40%

Year	Book Value Start Year	Depreciation	BV End of Year
1	130,000	130,000 · .4 = 52,000	78,000
2	78,000	78,000 · .4 = 31,200	46,800
3	46,800	46,800 · .4 = 18,720	28,080
4	28,080	28,080 · .4 = 11,232	16,848
5	16,848	16,848 − 10,000 = 6,848	10,000

↑ Can only go down to Salvage value

(2)

c) CEO gets bonus if high earnings

Ignore Tax issues

Wants bonus as soon as possible

No scenario where he can get bonuses both years, right?

Then to maximize earnings soly in the 1st year he should use the straight line method as it will lead to the lowest expenses, and thus highest earnings

---

If he wanted a bonus soly in year 2, he would chose the DDB method. Actually, straight line still has a lower depreciation expense that year.

Actually, One would have to consider the sale.

Value after 2 years:

	Straight Line	DDB
	82,000	46,800
	2,000 loss on sale	33,200 gain on sale
together year 2	$-24{,}000 - 2{,}000$ $-26{,}000$	$-31{,}200 + 33{,}200$ $+2{,}000$ gain ← so DDB best

(3)

Accounting Journal Entries

	Cash	NonCash	= Liabilities	+ Contrib	+ Retained Earnings (Income Statement)
Year 1					
Purchase	−130,000 Cash	+130,000 PPE			
Depreciation		−52,000 PPE			−52,000 Depreciation
Year 2					
Depreciation		−31,200 PPE			−31,200 Depreciation
Sale	+80,000 Cash	−46800 PPE			+33200 Gain on asset sale

(4)

d) Chooses straight line depreciation

in year 2 → 5,000 in maintance to extend service life

Year 1

← Book value includes salvage cost!

Book Value 130,000, 5 years

Depreciation $\frac{130,000 - 10,000}{5} = 24,000$

New BV 106,000, 4 years

Year 2

BV 106,000, 4 years

Maintance 111,000, 8 years

Depreciation $\frac{111,000 - 10,000}{8} = 13,250$ ← don't forget salvage value

New BV 97,750, 7 years

Year 3

BV 97,750, 7 years

Depreciation 13,250

New BV 85,500, 6 years

(5)

2. Deferred Taxes

HNS Corp

Uses accelerated for tax purposes

Straight line for fin. reporting

2010; purchase 1,000,000 asset

Fin Reporting 7 years SV 300,000

Tax: 4 years 0 SV

30%, 40%, 25%, 5%

Net income before taxes, taxable income 1,000,000 before depreciation

35% tax rate

a) tax expense, deferred taxes, taxes payable

So - first depreciation straight line

Base = 1,000,000 - 300,000 = 700,000

Rate = $\frac{1}{7}$ = 14,28%

Year	BV start	Depreciation	BV End
1	1,000,000	$\frac{700,000}{7}$ = 100,000	900,000
2	900,000	↓	800,000
3	800,000		700,000
4	700,000		600,000

(5b)

5	600,000		500,000
6	500,000		400,000
7	400,000	↓	300,000
8	300,000	0	300,000

tax depreciation

Year	BV start	Depreciation	BV end
1	1,000,000	1,000,000 · .3 = 300,000	700,000
2	700,000	1,000,000 · .4 = 400,000	300,000
3	300,000	1,000,000 · .25 = 250,000	50,000
4	50,000	1,000,000 · .05 = 50,000	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0

Year	tax expense/taxes payable (taxable income - tax depreciation) rate	net income before taxes income - fin depreciation
0		
1	(1,000,000 − 300,000) · .35 = 245,000	1,000,000 − 100,000 = 900,000
2	(1,000,000 − 400,000) · .35 = 210,000	
3	(1,000,000 − 250,000) · .35 = 262,500	
4	(1,000,000 − 50,000) · .35 = 332,500	
5-7	(1,000,000 − 0) · .35 = 350,000	↓
8	(1,000,000 − 0) · .35 = 350,000	1,000,000 − 0

taxable income → tax methods

net income before taxes → financial method

(6)

Year	Provision for Income Taxes (net income before taxes) · tax rate	Deferred Tax Liability (provision for income taxes − taxes payable)
1	900,000 · .35 = 315,000	70,000
2		70,000 + 105,000 = 175,000
3		175,000 + 52,500 = 227,500
4		227500 − 17,500 = 210,000
5		210,000 − 35,000 = 175,000
6		175,000 − 35,000 = 140,000
7		140,000 − 35,000 = 105,000
8	1,800,000 · .35 = 350,000	105,000 + 0 = 105,000

?; shouldn't it even out?

?; Tax expense = tax paid − change in defered tax liability
?confused w/ wording − must have done something wrong here

b) They sell asset at year 5 for 450,000

So at end year 5 BV = 500,000

So 50,000 loss on asset

	Cash +	Non cash	= Liabilities +	RE
Sale	+450,000 Cash	−500,000 PPE		−50,000 Loss on asset sale

?; about IRS − book does not say

But in the IRS's mind the asset has been paid off,

So entire sale amount must be reported as income.

(8)

3. Long Term Debt

Edwards Corp issuing bonds.

a) 1,000 10-year 0 coupon bonds face value 1,000 for 463,193.49 in cash. What is coupon rate and effective intast rate.

Well coupon rate stated in the problem! =0%!

FV = 1,000,000

PV = 463,193.49 n = 10 r = ?

$$P = \frac{1}{(1+r)^t}$$

$$\frac{1,000,000}{(1+r)^{10}} = 463,193.49$$

solve

r = .079999 = 8%

(8)

b) Issue another bond. $t = 3$ $\# = 10$

FV = 10,000 coupon = 5% Show journal entries

i) effective interest = 3%

Taka market rate. So bond issued at a preimum

Selling price = r_1 = PV

~~FV = 10,000~~ can't say!!

PV of the principal, 10,000 $n = 3$ $r = 3\%$

$$= \frac{10,000}{(1+.03)^3} = 9151.41$$

PV of the interst annuity $n = 3$ $r = 4$ $\doteq 2.77519$

Payments $= 5\% \cdot 10,000 = 500$

$500 \cdot 2.77509 = 1387.545$

Selling price/total PV = $9151.41 + 1387.55 = 10,538.96$

So "preimum" = 538.96 for each

	Cash	[Bond Payable + Premium] = NBP	+ RE
Issue	105,389.61	100,000 + 5389.61 = 105389.61	↓.03
1	−5,000 ← coupon rate	[−1838.31] Cash − RE	103551.30 old net + premium
			↓.03 −3161.68 Interest
2	−5,000	[−1893.46]	101657.84
			↓.03 −3106.54
3	−5,000	[−1950.26]	99707.57
			−3049.74
	−100,000	rounding error, should be 100,000	−100,000

think about it

9

ii) Market interest = 5%

So we are at par

PV of principal 10,000 · n=3 r=5

$$\frac{10{,}000}{(1+.05)^3} = 8638.38$$

PV annuity of intrst n=3 r=5

Coupon amt = .05 · 10,000 = 500

500 · 2.72325 = 1361.625

total PV = 8638 + 1361 = 10,000 ✓ did not have to do that for each

	Cash	= Bond Payable	+ RE
Issuance	+100,000	+100,000	
1	-5000		-5000
2	-5000		-5000
3	-5000		-5000
	-10,000	-100,000	

(10)

iii) Market rate = 10%

So issued at discount

PV of principal 10000 $n=3$ $r=10$

$$\frac{10,000}{(1+.1)^3} = 7513.15$$

PV annuity interest

Coupon amt $= .05 \cdot 10,000 = 500$

$500 \cdot 2.48685 = 1243.425$

total PV $= 7513 + 1243 = 8756.57$

So "discount" $= 1243.42$ for each

Cash = [Bond Payable − Discount] = NBP + RE

Issuance +87565.73 [+100,000 − 12434.26] = +87565.73 + 0

1 −5000 [+3756.57] = 91322.30 − 8756.57

Cash + RE; old NBP + discount ×1.10 ↘ ×1.10

2 −5000 [+4132.23] = 95454.53 − 9132.23

3 −5000 [+4545] = 99999.98 − 9545.45

End −100,000 −100,000

rounding error

(11)

4. Leases 4-year

Liu Xiabo = Leasee

Mario Llosa = lessor

200 laser copiers at $500 each

Expected life = 5 years Rv = 100

At end of lease can purchase at 80 each

Intest = 5%

Straight Line depreciation

a) Should use capital or operating lease?

She must use a capital lease because the 4 year life is more than 75% of the 5 year expected life. The lease term is for 80% of the assets life.

b) Journal entries of capital lease

	Cash + Noncash	= Liabilities	+ RE/Net Income
Sign lease	+709190 Lease	= +709190 Lease	

Need to find PV of lease payments

PV of 200,000 anuity, 5% interst, 4 years = 3.54595

What is the lease cost?

I am assuming $100/each/year

(12)

Year 1 Depreciation

-177297 Lease asset

-177297 depreciation expense

Depreciation $\frac{709190}{4} = 177297$ rounding

Year 1 Lease Payment

-200,000 cash

-164540 lease liability

-35,459 interest expense

Split lease payment b/w interest + principal

interest : Unpaid balance × interest rate

= 35,459

Lease liability is what is left over

Year 2 Depreciation

-177297 lease asset

-177297 depreciation expense

Year 2 Lease payment

-200,000 cash

-164540 lease liability

-35459 interest expense

Year 3 Depreciation

-177297 lease asset

-177297 depreciation expense

Year 3 LP

-200,000 Cash

-164540 lease liability

-35459 interest expense

Year 4 D

-177297 lease asset

-177297 depreciation expense

Year 4 LP

-200,000 Cash

-164540 lease liability

-35459 interest expense

note not a fair calc - since diff Times

-800,000 + 0 = -151030 - 851024 ✓

(13)

c) Operating Lease

	Cash + Noncash	= Liabilities	+ RE/Net Income
		not recorded	
Sign Lease			
Year 1 Lease Payment	−200,000 Cash		−200,000 Rent expense
Year 2 LP	−200,000		−200,000 rent expense
Year 3 LP	−200,000		−200,000 rent expense
Year 4 LP	−200,000		−200,000 rent expense

15.501/15.516
Corporate Financial Accounting
Problem Set #4
Fall 2010
Due November 10th in class

IMPORTANT INFORMATION:

Please hand in a hard copy of your answers in class on the due date. **Soft copy submissions will not be accepted**. Only one copy per group is required. Maximum of three people per group. If you cannot attend class, you may drop off the problem set before the due date in Lynn Li's mail tray during business hours. The mail tray is located in E62-655.

Question 1: Property, Plant and Equipment

Diamond, Mortensen, and Pissarides (DMP) Corporation purchases a computer equipment that matches firms with the employee on January 1st, Year 1, at a cost of $130,000. The asset is expected to have a service life of 5 years and a salvage value of $10,000.

(a) Compute the amount of depreciation for each of Year 1 through 5 using the straight-line depreciation method.

(b) Compute the amount of depreciation for each of Year 1 through 5 using the double-declining balance method.

(c) The CEO, Brandon Lee, receives a bonus if the corporation reports high earnings. As a result, he always chooses the accounting method that would give him the highest salary possible. First, he must decide whether to follow straight-line or double-declining balance method. Once he commits to a depreciation method, Brandon will not change his accounting choice. He knows that on December 31st of Year 2, the corporation will sell their equipment for $80,000. Assuming that Brandon Lee wants to receive a bonus as soon as possible, that is, in year 1, and ignoring tax issues, will he choose the straight-line or double-declining balance method? Will Brandon make the same depreciation decision if he chooses to receive his bonus in year 2? What are the accounting journal entries for the sale of the computer equipment using the accounting method that gives Brandon Lee the highest income in year 2?

(d) Assume Brandon Lee chose to use straight-line depreciation. On June 30th, Year 2, the Board members of DMP Corporation meet and decide to NOT sell the equipment as originally planned. Instead, they decided to incur maintenance of $5,000 so that the service life is extended for another 4 years (current service life + 4 years). What are the associated depreciation expenses for years 2 and 3?

ANSWER:

(a) Straight-line depreciation expense = (Purchase Price – Salvage Value) / Estimated Useful Life = ($130,000-$10,000)/5=$24,000. The depreciation expense is the same every year.

(b) Double declining balance method
Straight-line depreciation rate = 1/5
Double declining depreciation rate = 2 * 1/5 = 40%
Annual Depreciation Expense = Book Value at Beginning of Year x Depreciation Rate

Yr	Book Value @ Beginning of Yr	Dep. Rate	Annual Dep. Expense	Acc. Dep.	Book Value @ End of Yr
1	$130,000	2 x 20%	$130,000*40% = $52,000	$52,000	$130,000 - $52,000 = $78,000
2	$78,000	40%	$78,000*40% = $31,200	$52,000 + $31,200 = $83,200	$78,000 - $31,200 = $46,800
3	$46,800	40%	$46,800*40% = $18,720	$83,200 + $18,720 = 101,920	$46,800 - $18,720 = $28,080
4	$28,080	40%	$28,080*40% = $11,232	$101,920 + $11,232 = $113,152	$28,080 - $11,232 = $16,848
5	$16,848	40%	$120,000 - $113,152 = $6,848	$120,000	$10,000

The year 5 depreciation rate is not $16,848*40% because we want the ending accumulated depreciation to be $120,000.

(c) At the end of Year 1, the depreciation expenses are $24,000 and $52,000 under straight-line and double-declining balance respectively. At the end of Year 2, the depreciation expenses are $24,000 and $31,200 under straight-line and double-declining balance respectively. Under the straight-line depreciation, the accumulated depreciation is $48,000; under the double declining depreciation, the accumulated depreciation is $83,200.

	Straight-Line Income	Double-Declining Income
Year 1	-$24,000	-$52,000
Year 2	-$2,000 - $24,000 = -$26,000	$33,200 - $31,200 = $2,000
Total Income	-$50,000	-$50,000

If Brandon Lee wants to receive a bonus at the end of year 1, he would choose the straight-line depreciation, which would give him an end-of-year income of -$24,000 instead of -$52,000. If Brandon Lee wants to receive a bonus at the end of year 2, he

would choose the double-declining depreciation, which would give him an end-of-year income of $2,000 instead of -$26,000.

The journal entries associated with double declining-balance method depreciation are:

Cash	$80,000	
Accumulated Depreciation	$83,200	
Property, Plant and Equipment		$130,000
Retained Earnings (Gains on Sale of Equipment)		$33,200

For completeness and your references, the journal entries associated with straight-line depreciation are:

Cash	$80,000	
Accumulated Depreciation	$48,000	
Retained Earn. (Loss on Sale of PP&E)	$2,000	
Property, Plant and Equipment		$130,000

(d) By June 30th, the firm has incurred $24,000*1.5=$36,000 worth of accumulated depreciation. That means the book value of the computer equipment is $130,000 - $36,000 = $94,000. The remaining service life is 5 – 1.5 =3.5 years. By incurring maintenance costs, the book value of the computer equipment is now $94,000 + $5,000 = $99,000. The service life is now 3.5 + 4 = 7.5 years. So, the new yearly depreciation expense is ($99,000-$10,000) / 7.5 = $11,866.67.

For year 2, the depreciation expense is $12,000/2 = $6,000 for the months of Jan 1st – June 30th and $11,866.67/2 = $5,933.33 for the month of July 1st – Dec 31st. Hence, the total depreciation expense for year 2 is $6,000 + $5,933.33 = $11,933.33.

For year 3, the depreciation expense is just $11,866.67.

Question 2: Deferred Taxes

Heck, Negishi, and Suzuki (HNS) Chemical Company uses an accelerated method of depreciation for tax purposes and straight-line for financial reporting. In 2010, HNS Chemical purchased a new asset for $1,000,000. For financial reporting purposes, it will depreciate this asset over 7 years to a salvage value of $300,000. For tax purposes, the company will depreciate the asset over 4 years to a salvage value of zero using the following annual percentages of the acquisition cost: 30%, 40%, 25%, and 5%. Net income before taxes and taxable income are otherwise the same, equaling $1,000,000 before depreciation in each year. The tax rate is 35%.

(a) What are the tax expense, deferred taxes, and taxes payable each year?
(b) HNS Chemical decided to sell the asset at the end of year 5 for $450,000. What are the associated journal entries related to this transaction? Would the same amount of gains and losses be reported to the Internal Revenue Services?

ANSWER:

(a)

Yr	Fin. Acct. Dep	Tax Dep.	Tax Expense	Taxes Payable	Deferred Taxes
1	$100,000	$300,000	($1,000,000 - $100,000) *0.35 = $315,000	($1,000,000 - $300,000) *0.35 = $245,000	-$70,000
2	$100,000	$400,000	$315,000	($1,000,000 - $400,000) *0.35 = $210,000	-$105,000
3	$100,000	$250,000	$315,000	($1,000,000 - $250,000) *0.35 = $262,500	-$52,500
4	$100,000	$50,000	$315,000	($1,000,000 - $50,000) *0.35 =$332,500	$17,500
5	$100,000	$0	$315,000	$350,000	$35,000
6	$100,000	$0	$315,000	$350,000	$35,000
7	$100,000	$0	$315,000	$350,000	$35,000

If the deferred taxes are negative, then this indicates that we have a "deferred tax liability." If the deferred taxes are positive, then this indicates that we have a "deferred tax asset."

(b) The associated journal entries for the sale of asset in year 5 are the following:

Cash	$450,000	
Acc. Dep.	$500,000	
Ret. Earn. (Loss from Sale of PP&E)	$50,000	
Property, Plant and Equipment		$1,000,000

The same amount of gains and losses would NOT be reported to the IRS. By year 5, there is no tax depreciation; hence, the company would record a gain of $450,000 to the IRS.

Question 3: Long-term Debt

Robert G. Edwards Corporation pioneered a technology that allows for in vitro fertilization (IVF). In the 32 years since the first "test tube baby," Edwards and his colleagues have refined IVF technology and are continuing to expand their reach. Edwards Corporation is issuing bonds this year to expand the business operations with the following transactions.

(a) Edwards Corp. first issues 1,000 10-year zero coupon bond for with face value of $1,000 per bond in exchange for $463,193.49 in cash. The CEO of Edwards Corp, Yichuan Liu, wants to know the coupon rate of the bond and the effective interest rate.

(b) Feeling that this was insufficient funds to do additional R&D, Yichuan Liu wants to issue another 10 bonds. This time, the face value of each bond is $10,000. The stated maturity is 3 years and the stated coupon rate is 5%, paid annually at the end of each year. Assuming the effective interest rate is (i) 3%, (ii) 5%, and (iii) 10% respectively, Yichuan Liu asks you to show the entries for the entirety of the bond under each effective interest rate.

ANSWER:

(a) $463{,}193.49 = \frac{1{,}000{,}000}{(1+r)^{10}}$ which means r = 8%. The effective interest rate is 8% and since the coupon is a *zero* coupon, then the coupon rate must be 0%.

(b) Coupon = 5%(100,000)=5,000

I'm going to use T-accounts rather than journal entries since you can see the effects in all years within a T-account. It should be easy for you to translate between the two methods.

(i) $BV = 5{,}000\left[\frac{1-(1.03)^{-3}}{0.03}\right] + \frac{100{,}000}{(1.03)^3} = 105{,}657.2.$

Cash (A)

BB	0		
Bond issuance	105,657.2		
		5,000	Coupon payment yr 1
EB yr 1 = BB yr 2	100,657.2		
		5,000	Coupon payment yr 2
EB yr 2 = BB yr 3	95,657.2		
		5,000	Coupon payment yr 3
		100,000	Bond
		9,342.8	EB yr 3

Bonds (A)

		0	BB
		100,000	Bond issuance
		100,000	EB yr 1 = BB yr 2
		0	No transactions
		100,000	EB yr 2 = BB yr 3
Bond	100,000		
		0	EB yr 3

Bonds Premium (L)

		0	BB
		5,657.2	=(105,657.2-100,000)
	1,830.28		
		3,826.92	EB yr 1 = BB yr 2
	1,885.19		
		1,941.72	EB yr 2 = BB yr 3
	1941,72		
		0	EB yr 3

Retained Earnings (SE)

		0	BB
Interest Expense Yr 1	3,169.72	105,657.2*0.03=3,169.72	
EB Yr 1	3,169.72		
Interest Expense Yr 2	3,114.81	(100,000+3,826.92)*.03=3,114.81	
EB Yr 2	6,284.53		
Interest Expense Yr 3	3,058.25	(100,000+1,941.72)*.03=3058.25	
EB Yr 3	9,342.78		

(ii) BV = 100,000 since this is at par. However, if we were to calculate, we'd find that it's 100,000. BV = $5{,}000\left[\frac{1-(1.05)^{-3}}{0.05}\right]+\frac{100{,}000}{(1.05)^3}=100{,}000$

Cash (A)

BB	0		
Bond issuance	100,000		
		5,000	Coupon payment yr 1
EB yr 1 = BB yr 2	95,000		
		5,000	Coupon payment yr 2
EB yr 2 = BB yr 3	90,000		
		5,000	Coupon payment yr 3
		100,000	Bond
		15,000	EB yr 3

Bonds (A)

		0	BB
		100,000	Bond issuance
		100,000	EB yr 1 = BB yr 2
		0	No transactions
		100,000	EB yr 2 = BB yr 3
Bond	100,000		
		0	EB yr 3

Retained Earnings (SE)

		0	BB
Interest Expense Yr 1	5,000		
EB Yr 1	5,000		
Interest Expense Yr 2	5,000		
EB Yr 2	10,000		
Interest Expense Yr 3	5,000		
EB Yr 3	15,000		

(iii) $BV = 5{,}000\left[\frac{1-(1.1)^{-3}}{0.1}\right] + \frac{100{,}000}{(1.1)^3} = 87{,}565.74$

Cash (A)

BB	0		
Bond issuance	87,565.74		
		5,000	Coupon payment yr 1
EB yr 1 = BB yr 2	82,565.74		
		5,000	Coupon payment yr 2
EB yr 2 = BB yr 3	77,565.74		
		5,000	Coupon payment yr 3
		100,000	Bond
		27,434.36	EB yr 3

Bonds (A)

		0	BB
		100,000	Bond issuance
		100,000	EB yr 1 = BB yr 2
		0	No transactions
		100,000	EB yr 2 = BB yr 3
Bond	100,000		
		0	EB yr 3

Bonds Discount (A)

BB	0	
	12,434.26	
		3,756.57
EB yr 1 = BB yr 2	8,677.69	
		4,132.23
EB yr 2 = BB yr 3	4545.46	
		4545.46
EB yr 3		0

Retained Earnings (SE)

		0 BB
Interest Expense Yr 1	8,756.57	
EB Yr 1	8,756.57	
Interest Expense Yr 2	9,132.23	
EB Yr 2	17,888.80	
Interest Expense Yr 3	9,545.46	
EB Yr 3	27,434.26	

Question 4: Leases

Liu Xiaobo Inc. entered into a 4-year lease agreement with Mario Llosa Corporation on January 1st, 2010. Liu Xiaobo Inc. will lease 200 laser copiers each costing $500. The copiers are expected to last for 5 years with a residual value of $100 per copier. At the end of the contract, Liu Xiaobo Inc. may purchase the laser copier at $80. (Assume that the interest rate is 5% and the company uses straight-line depreciation).

(a) Should Liu Xiaobo Inc. record the copier lease as capital lease or operating lease? Why?
(b) What are the journal entries if Liu Xiaobo Inc. treated the lease as a capital lease?
(c) What are the journal entries if Liu Xiaobo Inc. treated the lease as an operating lease?

ANSWER:

(a) There are 4 criteria that determine whether this is a capital or operating lease. The FASB provides rules (FAS 13) for classifying leases as operating or capital. A lease is a capital lease if it meets *any* of the following:

1. It transfers ownership to the lessee at the end of the lease term.
2. Transfer of ownership at the end of the lease is likely because the lessee has a "bargain purchase" option (for a price less than predicted fair market value at the future date).
3. The lease extends for 75% or more of the asset's life.
4. The present value of the minimum contractual lease payments equals or exceeds 90% of the fair market value of the asset at the time the lessee signs the lease.

Since the lease with Llosa Corp allows Liu Xiaobo Inc. to purchase the laser copier at the end of the lease, we record this as a **capital lease**.

(b) The face value of the lease = 200*$500 = $100,000. Depreciation expense per year is $\frac{\$500*200-\$100*200}{5\ years} = \$16{,}000/year$. The lease lasts for 4 years.

$100{,}000 = \frac{Lease\ Payment}{0.05}\left(1-\frac{1}{1.05^4}\right)$ so $Lease\ Payment = 28{,}201.18$ per year for the next 4 years.

On Jan 1st, Year 1: we have the following journal entries:

Leased Asset	$100,000	
	Lease Liability	$100,000

On Dec. 31st, Year 1, we have to make 2 adjusting entries. First, we must depreciate the asset. Second, we must pay any interest expense on the asset:

First, Depreciation Expense is: $16,000 per year as calculated above.

Ret. Earn. (Deprec. Expense)	$16,000	
	Accumulated Depreciation	$16,000

Second, Interest Expense = 0.05*$100,000 = $5,000

Lease Liability is the difference between cash payments and the interest expense

Ret. Earn. (Interest Exp)	$5,000	
Lease Liability	$23,201.18	
Cash		$28,201.18

On Dec 31st, Year 2, we must make the following entries:

Ret. Earn. (Deprec. Expense)	$16,000	
Accumulated Depreciation		$16,000

The Interest Expense must be re-computed as the book value has changed after year 1, so

Interest Expense = 0.05*($100,000 - $23,201.18) = $3,339.94

Ret. Earn. (Interest Exp)	$3,339.94	
Lease Liability	$24,861.24	
Cash		$28,201.18

On Dec 31st, Year 3, we must make the following entries:

Ret. Earn. (Deprec. Expense)	$16,000	
Accumulated Depreciation		$16,000

The Interest Expense must be re-computed as the book value has changed after year 2, so

Interest Expense = 0.05*($66,798.82-$24,861.24) = $2,096.88

Ret. Earn. (Interest Exp)	$2,096.88	
Lease Liability	$26,104.3	
Cash		$28,201.18

On Dec 31st, Year 4, we must make the following entries:

Ret. Earn. (Deprec. Expense)	$16,000	
Accumulated Depreciation		$16,000

The Interest Expense must be re-computed as the book value has changed after year 2, so

Interest Expense = 0.05*($41,937.58-$26,104.3) = $791.66

Ret. Earn. (Interest Exp)	$791.66	
Lease Liability	$27,409.52	
Cash		$28,201.18

(c) On January 1st, Liu Xiaobo Inc. makes no accounting entry.

On each December 31st, Liu Xiaobo Inc. records the same rent expenses incurred for years 1, 2, 3, and 4.

Ret. Earn. (Rent Exp)	$28,201.18	
Cash		$28,201.18

11/10

Stockholders' Equity

15.501/516 **Corporate Financial Accounting**
Fall 2010
Lecture 17

Professor Ross Watts
Sloan School of Management
Massachusetts Institute of Technology

Housekeeping

- Problem sets
  - PS4 due today
- Reading
  - Dyckman chapters 1-3, 6-11(including appendix 11A)
- Exam
  - 11/17 (7 days from today)
  - Cover through today's lecture 17
  - Review on 11/15
  - Last Fall's and last Spring's 2nd exams on Stellar
  - Practice problems for Chapters 1-3 and 6-11 on Stellar
- Today's slides
  - Available on Stellar

Agenda

- Ratio Analysis
  - Times Interest Earned
- Stockholders' Equity
  - Aka Shareholders' Equity, Owner's Equity

Times Interest Earned

$$\text{Times interest earned} = \frac{\text{Income before income taxes and interest expense}}{\text{Interest expense}}$$

Indicates the company's ability to meet interest payments as they come due.

Similar to fixed coverage ratio in TCBY's debt covenants (Lecture 15) which included cash dividends & replacement capex in addition to interest expense

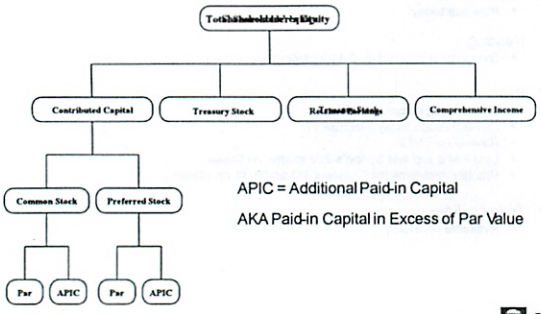
Times Interest Earned - Example

- Company ABC's profit before interest and taxes is $22, 000 and its interest expenses are $10,000:
- TIE Ratio = $22,000 / $10,000 = 2.2
- It shows that your business is earning the interest charges two or more times each year.

Stockholders' Equity

- To date only considered 2 parts of Stockholder's Equity
  - Contributed capital
    - Proceeds from firm's stock issues (net of treasury stock)
  - Retained earnings
    - Income
    - Dividends
- A corporation's Stockholder's Equity is typically more complex
  - More components than contributed capital & retained earnings
  - Affected by more types of transactions than we have considered
    - E.g., stock options, stock splits, stock repurchases
- Objective
  - Understanding of
    - Stockholders' Equity components
    - Other transactions & events that affect Stockholders' Equity

Chart of Owners' Equity



APIC = Additional Paid-in Capital

AKA Paid-in Capital in Excess of Par Value

7

Contributed Capital

- Can consist of several types of shares or stocks
- Two common classes of stock
  - Common stock
    - Always exists
    - May have more than one type
      - e.g. A & B
  - Preference stock
    - Need not exist
    - May also have more than one type
- Both classes of stock typically have limited liability
  - Stockholders liability is limited to their investment

8

Came in 30 min late

Contributed Capital: Common Stock

- Basic residual ownership share in the corporation
  - Have the residual claim on the firm's assets after the firm's debts & obligations are paid
  - Can vote on certain corporate governance issues
    e.g. election of the Board of Directors
- Often has a par value
  - A value stated on face of the security
    - Originally the amount shareholders had to contribute to firm
      - If par not fully paid, in bankruptcy creditors could require payments of the amount unpaid.
      - Since states require shares be fully paid up, par is irrelevant today
      - Has no relation to market value today
  - No par value shares are also common today

9

Contributed Capital: Preferred Stock

- Typically have priority over common stock in
  - Dividends (a stated rate)
  - Assets in liquidation
- Sometimes do not have voting rights
  - Except in certain conditions
- Other rights & preferences may include
  - Cumulative dividends: unpaid dividends accumulate & must be paid before common shareholders can receive dividends
  - Participating: receive a portion of income in addition to stated dividend
  - Convertible: can be converted into common stock at a pre-specified rate
  - Callable: can be retired by management at a pre-specified price
  - Redeemable: can be retired by holder at a pre-specified price

10

won't go much above callable price

Other Terminology Related to Contributed Capital

Authorized
Amount that can be issued as stated in the corporation's Articles of Incorporation

Memorandam in Australia

Issued
Number of shares sold to shareholders. There are often shares authorized to be issued but not issued

Outstanding
Number of shares actually owned by shareholders
[Issued ≥ Outstanding because of share repurchases]

11

Accounting for Stock Issuance

Accounting for common stock issuance keeps track separately of the stock's

(1) par value &

(1) any additional capital received in excess of par value called additional paid in capital (APIC)

For example, assume 500 shares having par value of $1.00 were issued by Smith Company for total cash received of $5,000.

Cash	=	Liab.	+	Common Stock at Par	+	APIC
5,000				500		4,500

How would this transaction change if the stock had no par value?

Cash	=	Liab	+	Common Stock no Par Value
5,000				5,000

12

what it means today

Par # means nothing
- left over from 100 years ago

Balance Sheet Presentation

Smith Company

Stockholders' Equity

Paid-in capital	
Common stock	
500 shares @ $1 par value	$ 500
Additional paid-in capital	4,500
Total paid-in capital	$ 5,000
Retained earnings	0
Total stockholders' equity	$ 5,000

t to start w/

13

Treasury Stock

get option to avoid taxes

Treasury Stock
Stock the company has repurchased

Why do companies repurchase their own shares?
bought on open market → alt to dividends for tax purposes
ESOP plan, Small reason: increase earnings per share (EPS)

Accounting for share repurchase affects cash & shareholders' equity

Dr Treasury stock
Cr Cash

What kind of account is Treasury Stock?
Contra equity account

14

Treasury Stock: An Example

Suppose Sloan Co purchases 100 shares at $5 per share.

Assets		Shareholders Equity				
Cash	=	PIC	+	RE	-	Treasury Stock
(500)						500

Since Treasury stock is a contra equity account, increasing treasury stock reduces equity!

15

Treasury Stock in the Balance Sheet

Sloan Company

Stockholders' Equity

Paid-in capital	
Common stock	
1,000 shares @ $1 par value	$ 1,000
Additional paid-in capital	2,000
Total paid-in capital	$ 3,000
Retained earnings	1,500
Total paid-in capital and retained earnings	$ 4,500
Less Treasury stock (100 shares)	500
Total stockholders' equity	$ 4,000

Note: we now have 3 (Contributed capital or PIC, Retained Earnings & Treasury stock) of the 4 components of Stockholders' Equity shown in slide 7

16

can retire the shares
- but restricts future freedom

Treasury Stock: Retirement

Treasury stock may also be retired. Assume par value is $1 per share, APIC=$2 per share and that Sloan Co retires the 100 shares they purchased at $5 per share.

RE	+	Par Value	+	APIC	-	Treasury Stock
(200)		(100)		(200)		(500)

↑ take out book value + retirement fee goes in here
but can't tell if loss or gain

17

Dividends

A dividend is a distribution by a corporation to its stockholders on a pro rata basis
e.g., 10% stock gets you 10% of the distribution

Dividends can take 4 forms
- Cash
- Note payable
- Property
- Stock

We'll only consider cash & stock dividends

18

Accounting for Cash Dividends

A firm has 1,000 shares outstanding & declares a $2 dividend. The dividend is paid later.

Entry at the time of the dividend declaration

Cash	=	Dividends Payable	+	APIC	+	RE
		2,000				(2,000)

Entry at the time the dividend is paid

Cash	=	Dividends Payable	+	APIC	+	RE
(2,000)		(2,000)				

Important Dividend dates:

Declaration Date — **Date of Record**

Ex-Dividend date — **Payment Date**

Stock Dividends

Stock dividend are payments in common stock instead of cash

Cash & stock dividends both decrease retained earnings

The difference is the other side of the entry

- A cash dividend reduces assets
- A stock dividend increases Paid-In Capital

Cash dividends reduce Stockholders' Equity

Stock dividends do not reduce Stockholders' Equity

- They just change the composition of Stockholders' Equity
- In doing so they reduce the firm's ability to pay cash dividends

Stock Dividends

Suppose a firm declares a $2,000 stock dividend (500 shares at a market price of $4 per share). A share's par value is $1.

	Cash	=	Common Stock	+	APIC	+	Ret. Earn
Stock dividend			500		1,500		-2,000
Cash dividend (Ultimately)	-2,000						-2,000

Note: 1. the sum of the equity effects for a stock dividend is zero
2. the cash dividend reduces equity by $2,000

Who benefits from a stock dividend?

Stock Splits

Companies will occasionally "split" their shares. For example, in a 2 for 1 split, shareholders receive 2 shares for each share they own.

The number of shares, the par value & the price per share will change

Example: Sloan Co has 1,000 shares outstanding with $1 par value and a price of $120. What happens when the company executes a 2 for 1 Stock Split?

Shares outstanding goes to 2,000 and par value goes to $0.50

Why do people view stock splits as a good thing?

Comprehensive Income

Some gains and losses are given accounting treatment that excludes them from the measurement of firm performance (net income) for the period (see Dyckman, pp. 503-504)

Comprehensive income = Net income
+ gains & losses excluded from Net income

The sum of these gains & losses is called Other Comprehensive Income

Unlike net income, OCI is not closed to retained earnings at the end of the period. Instead it is closed to Accumulated Other Comprehensive Income.

Other Comprehensive Income (OCI)

The gains & losses that
1. do not flow through net income, but
2. are included in comprehensive income

include:

- Unrealized gains & losses on available for sale securities
- Unrealized gains & losses on derivative transactions (hedges)
- Some types of foreign currency adjustments
- Some pension adjustments

dividends in shares

Usually split declaration + paid

if buy after that won't get it (so price drops)

- if declared → have to pay

paid to people on the register at that time

3 days before date of record

sum of equity effects = 0

or

nothing happens to SE

Share holders not dilluted

ability to pay cash dividends reduced → make it permanent capital

creditors helped

increases leverage of firm

less common now - big owners

usually lower brokerage price for lower cost

- now no advantage

have reduced in last decade

not on income statement

Presentation of OCI

Balance sheet presentation

Stockholders' Equity	
Common stock (PIC)	$xxx
Retained earnings	xxx
Total PIC& retained earnings	$xxx
Less: unrealized loss on available for sale securities	(xxx)
Total stockholders equity	$xxx

25

Presentation of OCI

Combined statement of income and comprehensive income

Net sales		$xxx
CGS		xxx
Gross profit		$xxx
Operating expenses		xxx
Income from operations	$xxx	
Other items		xxx
Income before taxes		$xxx
Income tax expense		xxx
Net income		$xxx
add OCI items		xxx
Comprehensive income		$xxx

26

Presentation of OCI

Statement of comprehensive income

Net income	$xxx
add OCI items	xxx
Comprehensive income	$xxx

27

OCI

Why are Other comprehensive (OCI) income items excluded from Net Income?

An increasing number of standards required some gains and losses to "bypass" the income statement, so the FASB in SFAS 130 required the preceding reporting of OCI

Why were those items excluded in the other standards?

Consider the items

- Unrealized gains & losses on available for sale securities
- Unrealized gains & losses on derivative transactions (hedges)
- Some types of foreign currency adjustments
- Some pension adjustments

Answer

Increased variability in Income

28

Stock Options

- Stock options are often granted to employees as part of their compensation package.
- Options give the holder the right to purchase the underlying stock at a specified price (exercise price) for a specified period of time.

29

Option Terminology

Grant date: the date the option is awarded

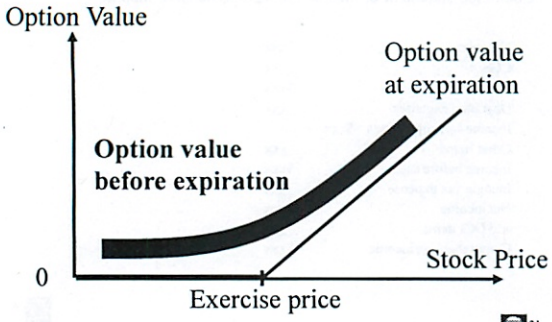
Vesting date : the date the holder is entitled to exercise the option ~ 2-3 years

Expiration Date : the date the option expires ~ 5-6 years

Strike Price : the price at which you can exercise the option

30

Key Accounting Question: What is the Value of Options Granted?



31

Stock Options – Old accounting rules

Accounting when granted: Two alternatives:

1) Recognize expense for the value of the options

90s

2) If the exercise price = fair market value of underlying stock at grant date, no expense is recorded

   If the exercise price < fair market value at grant date, some compensation expense may be recorded.

   Disclose amount of grant in footnote

32

Old Accounting Rules for Options: FAS 123

The FASB tried to require companies to record compensation expense when stock options were granted with an exercise price greater than or equal to the current stock price.

The FASB argued that modern option pricing theory (Black-Scholes) would suggest that these options have value.

Companies revolted and a compromise was reached under FAS 123 allowing companies to continue to account for options as before (no expense) but disclose in a footnote what this expense would be.

33

Change in Accounting Rules

Following the accounting scandals in 2002 & 2003, the FASB decided to revisit the accounting for stock options

This time they were able to pass new rules requiring firms to expense stock options

FASB required most traded companies to report the expense associated with stock options for fiscal years beginning after December 15, 2005

34

New Accounting Rules for Options

To estimate stock option expense, on the grant date the firm must determine (estimate) the following:

- Market price of the stock
- Strike price
- Time between grant date & exercise date
- Risk free interest rate
- Expected stock price volatility
- Expected dividends

These values are inputs into option pricing formulae that allow the firm to estimate the fair value of the options on the grant date.

35

New Accounting Rules for Employee Stock Options

The fair value of the options is expensed over the vesting period with the other side of the entry being shareholders' equity.

Suppose a company grants options to purchase 200,000 shares to management. The options are granted at an exercise price of $30 (current price) & can be exercised after vesting in 2 years. The firm uses an accepted method to value the options at $10 each. In each of the next two years the following entry will be made

Compensation expense (retained earnings)	$1,000,000	
Additional Paid-in Capital (stock options)		$1,000,000

In the 3rd year the stock price rises causing the managers to exercise their options at the $30 exercise price. The company uses 200,000 treasury stock previously bought at $25 to satisfy the option requirement and receives $6 million in cash

When employees exercise their options & pay the exercise price the entry is:

Cash	$6,000,000	
Treasury Stock		$5,000,000
APIC		1,000,000

36

Intel: Stockholders' Equity

	2005	2004
Stockholders' equity:		
Preferred stock, $0.001 par value, 50 shares authorized; none issued	—	—
Common stock, $0.001 par value, 10,000 shares authorized; 5,919 issued and outstanding (6,253 in 2004) and capital in excess of par value	6,245	6,143
Acquisition-related unearned stock compensation	—	(4)
Accumulated other comprehensive income	127	152
Retained earnings	29,810	32,288
Total stockholders' equity	**36,182**	**38,579**

Stockholders Equity - Summary

In today's class we:

Reviewed the accounting for Contributed Capital (stock issuance, common and preferred stock)

Reviewed the accounting for Treasury Stock (stock repurchases)

Reviewed the concept of Comprehensive Income

Provided an overview of other events that affect SE

- Stock Options
- Stock Splits
- Stock Dividends
- Cash dividends

11/15

Mid-term II Review

15.501/516 **Corporate Financial Accounting**
Fall 2010
Lecture 18

Professor Ross Watts
Sloan School of Management
Massachusetts Instituteof Technology

Housekeeping

- Reading
  - Dyckman chapters 1, 2, 3, 5 (213-223), 6, 7, 8, 9, 10 (436-445) & 11
- Today's slides
  - Available on stellar since Friday

Important Information

- Exam
  - Lasts for 80 minutes
  - Is closed book
  - Covers
    - chapters 7, 8, 9, 10, & 11
    - Inventory, Long-term assets, Time value of money, Long-term debt, Leases & Shareholders' Equity
- You will need a calculator!!!
- Financial tables will be provided
- Previous exams may not be representative

interest rates are not half for half of year b/c compounding Dyckman disguises this

Type of questions

- Multiple choice
- Short answer

no long dns

Studying for the exam

- Re-work problems in the lecture notes
- Re-work problems in the problem sets
- Solve problems in the review session
- Practice additional problems posted

The exam will cover

- Inventory (chapter 7)
- Long-term assets (chapter 8)
- Time value of money (Appendix A pp. 592-597 & slides)
- Long-term liabilities (chapter 9)
- Leases (chapter 10)
- Shareholders' equity (chapter 11)
- Ratios in the notes - not what are in book

no "comprehensive" - but underlying issues Of course

Inventory

- Nature & types of inventories
  - Merchandiser (purchased goods)
  - Manufacturer (raw materials, WIP, Finished goods)
- Recording & tracking inventory
  - Returns, freight costs, etc...
    - Costs include all cost necessary to bring inventory to saleable condition
  - Periodic vs perpetual inventory
- Understand cost flow assumptions
  - FIFO, LIFO, average-cost
- LIFO reserve

7

FIFO, LIFO & Weighted Average

Transactions:

1) Beginning inventory: 100 units at $10 per unit
2) Buy 200 units of inventory for $11 per unit
3) Buy 300 units of inventory for $12 per unit
4) Buy 400 units of inventory for $13 per unit
5) Ending inventory: 450 units

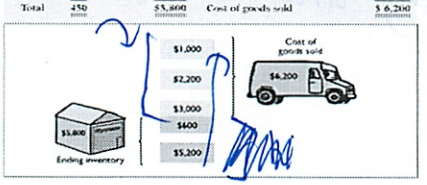
8

FIFO

COST OF GOODS AVAILABLE FOR SALE

Date	Explanation	Units	Unit Cost	Total Cost
Jan. 1	Beginning inventory	100	$10	$ 1,000
Apr. 15	Purchase	200	11	2,200
Aug. 24	Purchase	300	12	3,600
Nov. 27	Purchase	400	13	5,200
	Total	1,000		$12,000

STEP 1: ENDING INVENTORY				STEP 2: COST OF GOODS SOLD	
Date	Units	Unit Cost	Total Cost		
Nov. 27	400	$13	$ 5,200	Cost of goods available for sale	$12,000
Aug. 24	50	12	600	Less: Ending inventory	5,800
Total	450		$5,800	Cost of goods sold	$ 6,200



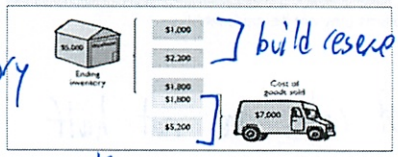
9

LIFO

COST OF GOODS AVAILABLE FOR SALE

Date	Explanation	Units	Unit Cost	Total Cost
Jan. 1	Beginning inventory	100	$10	$ 1,000
Apr. 15	Purchase	200	11	2,200
Aug. 24	Purchase	300	12	3,600
Nov. 27	Purchase	400	13	5,200
	Total	1,000		$12,000

STEP 1: ENDING INVENTORY				STEP 2: COST OF GOODS SOLD	
Date	Units	Unit Cost	Total Cost		
Jan. 1	100	$10	$ 1,000	Cost of goods available for sale	$12,000
Apr. 15	200	11	2,200	Less: Ending inventory	5,000
Aug. 24	150	12	1,800	Cost of goods sold	$ 7,000
Total	450		$5,000		



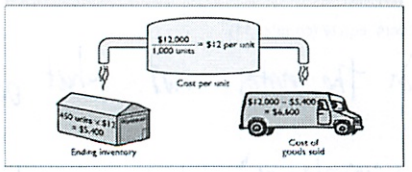
10

Weighted Average

COST OF GOODS AVAILABLE FOR SALE

Date	Explanation	Units	Unit Cost	Total Cost
Jan. 1	Beginning inventory	100	$10	$ 1,000
Apr. 15	Purchase	200	11	2,200
Aug. 24	Purchase	300	12	3,600
Nov. 27	Purchase	400	13	5,200
	Total	1,000		$12,000

STEP 1: ENDING INVENTORY				STEP 2: COST OF GOODS SOLD	
$12,000 ÷ 1,000 = $12.00				Cost of goods available for sale	$12,000
Units	Unit Cost	Total Cost		Less: Ending inventory	5,400
450	$12.00	$5,400		Cost of goods sold	$ 6,600



11

FIFO, LIFO & Weighted Average

HOUSTON ELECTRONICS
Condensed Income Statements

	FIFO	LIFO	Average Cost
Sales	$11,500	$11,500	$11,500
Beginning inventory	1,000	1,000	1,000
Purchases	11,000	11,000	11,000
Cost of goods available for sale	12,000	12,000	12,000
Ending inventory	5,800	5,000	5,400
Cost of goods sold	6,200	7,000	6,600
Gross profit	5,300	4,500	4,900
Operating expenses	2,000	2,000	2,000
Income before income taxes	3,300	2,500	2,900
Income tax expense (30%)	990	750	870
Net income	$ 2,310	$ 1,750	$ 2,030

12

Income Statement Effects

- In periods of increasing prices
  - FIFO reports the highest net income
  - LIFO the lowest
  - average cost falls in the middle.
- In periods of decreasing prices
  - FIFO will report the lowest net income
  - LIFO the highest
  - average cost in the middle.

inflation

deflation

13

Balance Sheet Effects

In a period of increasing prices, costs allocated to ending inventory using:

- FIFO will approximate current costs
- LIFO will be significantly understated

esp if never reduce inventory

14

LIFO Reserve

- Difference between LIFO & FIFO inventory values
- Allows comparison of LIFO & FIFO companies' inventory values & CGS
- FIFO inventory = LIFO inventory + LIFO reserve (ending) on fin statements
- FIFO cogs = LIFO cogs - Δ LIFO reserve

15

Nature of PP&E

- Which of the following is **not** properly classified as property, plant, and equipment?
  - Building used as a factory
  - Land used in ordinary business operations
  - A truck held for resale by an automobile dealership ←
  - Land improvement, such as parking lots and fences

16

remember a bit of of a piggy bank

if need a good quarter

allowed to give companies a tax difference

Plant assets

- **Are resources that**
  - have physical substance
  - are used in the operations of a business
  - are not intended for sale to customers
  - deliver service potential over their useful lives
    - (except land)

land does not get depreciated

17

Long-term Assets

- Acquisition costs
- Depreciation
  - Depreciation methods
  - Changes in depreciation
  - Sales and disposals of long-term assets
    - E.g., additions, write-offs, etc...
- Implications for deferred taxes
- Intangible assets

handle sale

18

Acquisition Costs

- What is given up to obtain the asset?
  - Include all costs required to bring the asset into serviceable or usable condition and location.
- Purchased Assets: Purchase price plus cost to prepare the asset for use
  - Installation, transport in included
- Self-Constructed Assets
  - Direct costs of construction
  - Financing costs
    - Interest on funds borrowed to finance construction

interest is capitalized until construction is finished

19

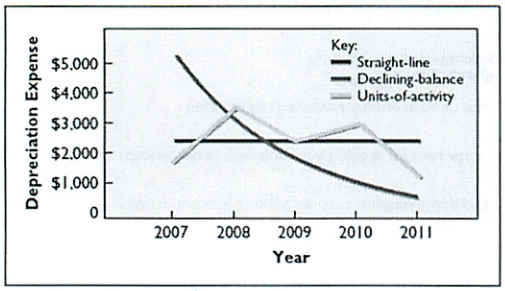
Depreciation methods

- Units of production
  - Depreciation cost per machine-hr = depreciable basis/service life (machine-hrs)
  - Depreciation Expense = Actual hours used * hourly rate
- Straight-line
  - Depreciation Expense = (Acquisition cost - salvage value) /service life
- Accelerated method
  - Higher depreciation expense in earlier yrs

Mainly worked w/

20

Patterns of Depreciation



21

all in nice chart

- (why has this not been shown before?)

Example - Depreciation changes

- Assumptions change
  - Cost = $100K, SV = 0
  - Initial useful life estimate of 5 years
  - After 2nd year, $30K improvement extending useful life by 3 years Or make improvement
    - i.e., to total of 8
- Questions
  - What is the annual depreciation expense for each of the first 2 years?
    - assume straight-line
  - What is book value at the end of 2nd year?
  - How do we account for the improvement?
  - What is annual depreciation expense for years 3 & beyond?

22

Example (cont'd)

- Assumptions
  - Cost = $100K, SV = 0
  - Initial useful life estimate of 5 years
  - After 2nd year, $30K improvement extending useful life by 3 years
    - i.e., to total of 8
- What is annual depreciation expense for the first 2 years?
  - $(100 – 0)/5 = $20K
- What is book value at the end of 2nd year?
  - $[100 – (20*2)] K = $60k
- How do we account for the improvement?
  - Capitalize the improvement costs. BV increases to $(60+30) = 90K
- What is annual depreciation expense for years 3 and beyond?
  - Years left = (5-2) + 3 = 6
  - Therefore, depreciation expense = $90K/6 = $15

23

Example (cont'd)

	Cash	PP&E	Acc. Depr	= L	Ret. Earn
Acquire PP&E	–100	100			
Yr 1 Depr.			-20		–20
Yr 2 Depr			-20		–20
Improvement	–30	+30			
Year 3 Depr.			-15		–15

24

Disposal of PP&E - Example

From earlier example:

Cost = $100K, SV = 0, Initial UL estimate of 5 years. After 2nd year, spend $30K on improvement that extends UL by 3 years (i.e., to total of 8).

At end of 7th year, when BV is $15K, sell asset for scrap value of $2K.

25

Disposal of PP&E - Example

	Cash	PP&E	Acc. Depr	= L	Ret. Earn
EB- Year 7 Prior to sale		130	-115		
Sale	2	-130	115		-13
EB – Year 7 After sale		0	0		

Loss on sale

Write off existing account

26

Disposal – T- Accounts

Gross PP&E

130	*130*

Acc. Depr.

115	115

Book value at time of sale = 15
Sale value = 2
Book value after sale = 0

Cash

2k

Loss on sale (RE)

13k

27

Disposal – Book Keeping

Dr Cash	2k	
Dr Loss on sale of asset	13k	Retained Earnings
Dr Acc. Depreciation	115k	
Cr PP&E		130k

28

So because of this

Tax & Timing Effects

Cooke Company bought a $90,000 asset at the beginning of 2000.

	Financial reporting	*Tax reporting*
Asset life	3 years	2 years
Depreciation rate	Straight line	MACRS: 60%, 40%
Residual value	$0	$0

Schedule of depreciation

a version of accelerated

Year	Financial reporting depreciation	Tax reporting depreciation	Depreciation difference	Accumulated difference, end of the year
2000	30,000	54,000	24,000	24,000
2001	30,000	36,000	6,000	30,000
2002	30,000	-	(30,000)	0

29

Deferred Taxes Example

- In 2000, income before depreciation is $80,000 for both financial and tax reporting. The tax rate is 30% with no anticipated change.

	Financial reporting	*Tax reporting*
NI before Depr.	80,000	80,000
– Depreciation	30,000	–54,000
= NI before taxes	50,000	26,000
	× 30%	× 30%
Tax Payable		7,800 ← actual payment
Tax Expense	15,000 ←	

Tax Expense = Tax Payable + ???
??? = $7,200 is "Deferred Tax Expense" ← both fin. statement

Entry?

Dr Tax Expense	$15,000	
Cr Tax Payable		$7,800
Deferred Tax Liab		7,200

30

Deferred Taxes over Time

Deferred taxes caused by timing differences are temporary; they reverse over time.

Year	Financial reporting depreciation	Tax reporting depreciation	Depreciation difference	Deferred Tax Expense	Acc. Depr Difference,	Def Tax Liability
2000	30,000	54,000	24,000	7,200	24,000	7,200
2001	30,000	36,000	6,000	1,800	30,000	9,000
2002	30,000	-	(30,000)	(9,000)	0	0

- Timing differences that create / increase deferred taxes are called ***originating differences***
- Timing differences that remove / decrease deferred taxes are called ***reversing differences***

31

lots of different treatments
We are only doing depreciation

became much regulated recently

Intangible Assets

- Intangible assets are recorded at cost
- If the intangible has a limited useful life, its cost is allocated (amortized) over the useful life (e.g., patent).
- If the intangible has an indefinite life, it is not amortized (e.g., goodwill).

32

and Lots use difference in two to figure out accounting methods - difficult to do

Intangible Assets

Type	Life	Valuation	Amortization
Patents & Copyrights	Useful Life	Acquisition & Defense Cost	Remaining life
Trademark	Indefinite	Acquisition & Defense Cost	None
Franchises & Licenses	Limited Indefinite	Acquisition Cost Acquisition Cost	Limited life None
Goodwill	Indefinite	Acquisition Cost	Impairment

33

patent - only the costs to acquire + defend
- so peanuts

Long-Term Debt

- Present & future value calculations
- Accounting for long-term debt (discount/premium)
- Retirement of long-term debt
- Leasing

not going to do today
can be used to manipulate earning

34

Financial Tables

Appendix A

Table A1 - Future Value of $1

Table A2 - Present Value of $1

Table A3 - Present Value of an Annuity of $1

Will be provided

35

FV Annuity = PV Annuity * FV #1

Example 1: Bond issued at par

- Suppose the following bond:
  - Coupon rate of 6% per year
  - Three annual payments
  - Principal payment of $10,000 at the end of three years
  - Assume market rate is 6%
- What is the present value of the bond?
  - $10,000

36

Bond issued at a Discount

Coupon rate 6% < Market rate at issuance 8%

- What is the present value of the bond?
- Payment stream
  - Interest payments = Coupon rate x Face Value= $600
  - Principal at maturity = $10,000
- Present Value
  - PV of cash flows discounted at the MARKET interest rate of 8%
  - Coupon payments (table 4)
    - PVOA (n = 3, r = 8%) x $600 = 2.57710 x 600 = $1,546.26
  - Principal (table 3)
    - PV of (10,000, n = 3, r = 8%) = 0.79383 x 10,000 = $7,938.30
  - Total = $9,484.56
    - Bond Payable $10,000.00
    - Less Discount (515.44)
    - Net Bond Payable $9,484.56

37

Bond issued at a Discount

Coupon rate 6% < Market rate at issuance 8%

- At the end of first year
- Interest expense
  - Net Bond Payable x 8%
    - $9484.56 x 8% = $758.77

MV

Dr Interest expense	758.77	
Cr Cash		600.00
Cr Discount on Bond Payable		158.77

reduce discount each year

- Net Bond Payable = $9484.56 + 158.77 = $9643.33

38

must be sold at discount to be competive

- makes up for low coupon payment

Bond issued at a Discount

Coupon rate 6% < Market rate at issuance 8%

ENTRIES

Cash	=	[Bond Payable	– Discount =]	NBP		
Issue	9,485	= [10,000	- 515	=]	9,485	

	Cash	=	[Bond Payable	- Discount =]	NBP +	RE
2001	(600)	=		159	9,643	(759)
2002	(600)	=		171	9,815	(771)
2003	(600)	=		185	10,000	(785)
	(10,000)				(10,000)	

39

Other long-term debt

- Should be able to account for
  - Bond issued at a premium
  - Zero coupon bond
  - Mortgage

also could be a qu

40

Leasing

- Two types of leases
  - Operating
    - Lessee rents property and accrues lease expense
  - Capital
    - Lessee economically "owns" property
    - Lessee records asset on balance sheet along with lease obligation
    - The expenses for a capital lease are depreciation + interest

off the books

41

lessor gets the tax deduction then can be split in lease cost

Accounting for Operating Leases

- Recorded as a rental of an asset in financial statements
- When lease agreement is signed and lessee begins to use asset, no entry is made
- As lease payments are made, cash is reduced and retained earnings are reduced (lease expense)

42

Accounting for Capital Leases

- Recorded as an asset acquisition with 100% debt financing in financial statements
- When lease agreement is signed and lessee begins to use asset, present value of lease payments is recorded as asset and corresponding liability
- During the lease term:
  - Cash reduced as lease payments are made
  - Lease asset depreciated => depreciation expense
  - Interest incurred on lease obligation => interest expense

+ asset + liability

43

Operating Lease

Year	Cash	=	RE
1	-5,060		-5,060
2	-5,060		-5,060
3	-5,060		-5,060

Annual Rent expense

44

Capital Lease

Cash	Leased Asset	Acc. Dep.	=	Lease Obligation	RE
	+30,000			+30,000	

Present value of lease payments at signing

45

Capital Lease

	Cash	Leased Asset	Acc. Dep.	=	Lease Obligation	RE
		+30,000			+30,000	
Yr. 1	-5,060				-260	-4,800
			-1,500			-1,500

Year 1 decrease in lease obligation
-5,060 - -4,800

Year 1 interest expense
(30,000) * 16%

Year 1 depreciation expense
(30,000 - 0) / 20

dep and paid lease
depreciation

46

Capital Lease

	Cash	Leased Asset	Acc. Dep.	=	Lease Obligation	RE
		+30,000			+30,000	
Yr. 1	-5,060				-260	-4,800
			-1,500			-1,500
Yr. 2	-5,060				-302	-4,758
			-1,500			-1,500

Year 2 decrease in lease obligation
-5,060 - -4,758

Year 2 interest expense
(30,000 - 260) * 16%

47

Capital Lease

	Cash	Leased Asset	Acc. Dep.	=	Lease Obligation	RE
		+30,000			+30,000	
Yr. 1	-5,060				-260	-4,800
			-1,500			-1,500
Yr. 2	-5,060				-302	-4,758
			-1,500			-1,500
Yr. 3	-5,060				-350	-4,710
			-1,500			-1,500

Year 3 decrease in lease obligation
-5,060 - -4,710

Year 3 interest expense
(30,000 - 260 - 302) * 16%

48

like morgage

investment bankers always looking to lease w/o capitalizing

Contributed Capital: Share Types

Common Stock

- Basic residual ownership share in the corporation.
  Holders have the right to any residual value in the firm after the stated obligations are met and can vote on certain corporate issues.
- Common stock typically has a par value, which is a stated value on the face of the security.
- There are shares of common stock that have no par value.
- Par value has little to no relation to market value.

means nothing today

49

Contributed Capital: Share Types

Preferred Stock

General term for a class of (usually nonvoting) stock.

Have preference to common stock in bankruptcy.

Other rights & preferences may include:

- Dividends: a pre-specified dividend stated when shares are issued. Rights to annual dividends are typically first to preferred stock then to common stock
- Cumulative Dividends: unpaid dividends accumulate & must be paid before common shareholders can receive dividends
- Participating: receive a portion of income in addition to stated dividend
- Convertible: can be converted in common shares at a pre-specified rate
- Callable: can be retired by management at pre-specified price
- Redeemable: can be retired by holder at pre-specified price

Should know what these mean

50

Other Terminology Related to Stock

Authorized
Amount that can be issued as stated in the corporation's Articles of Incorporation

in state incorporated

Issued
Number of shares sold to shareholders. There are often shares authorized to be issued but not issued.

Outstanding
Number of shares actually owned by shareholders
[Issued ≥ Outstanding because of share repurchases]

→ treasury stock

51

Balance Sheet Presentation

Sloan Company

Stockholders' Equity

Paid-in capital	
Common stock	
1,000 shares @ $1 par value	$ 1,000
Additional paid-in capital	2,000
Total paid-in capital	$ 3,000
Retained earnings	1,500
Total paid-in capital and retained earnings	$ 4,500
Less Treasury stock (100 shares)	500
Total stockholders' equity	$ 4,000

example what it could look like

Journal Entry for Treasury Stock?

Dr Treasury stock	$500	
Cr Cash		$500

52

Cash Dividends

A firm has 1,000 shares outstanding & declares a $2 dividend. The dividend is paid later.

Entry at the time of the dividend declaration

Cash	=	Dividends Payable	+	APIC	+	RE
		2,000				(2,000)

Entry at the time the dividend is paid

Cash	=	Dividends Payable	+	APIC	+	RE
(2,000)		(2,000)				

Important Dividend dates:

Declaration Date — **Date of Record**
Ex-Dividend date — **Payment Date**

(buy on exchange after this → no dividend)

(When buy on stock market → lag)

53

Stock Dividends

Suppose a firm declares a $2,000 stock dividend (500 shares at a market price of $4 per share). A share's par value is $1.

	Cash	= Common Stock +	APIC +	Ret. Earn
Stock dividend		500	1,500	-2,000
Cash dividend (Ultimately)	-2,000			-2,000

take out of retained earnings

Note: 1. the sum of the equity effects for a stock dividend is zero
2. the cash dividend reduces equity by $2,000

Sum of equity effects = 0

54

Creditors benefit
- reduced ability to pay dividends

get 2 for 1

Stock Splits

Companies will occasionally "split" their shares. For example, in a 2 for 1 split, shareholders receive 2 shares for each share they own.

The number of shares, the par value and the price per share will change.

Example: Sloan Co has 1,000 shares outstanding with $1 par value and a price of $120. What happens when the company executes a 2 for 1 Stock Split?

Shares outstanding goes to 2,000 and par value goes to $0.50

Why do people view stock splits as a good thing?

55

Used when people were paying brokerage fees
Not as popular anymore

Presentation of Other Comprehensive Income

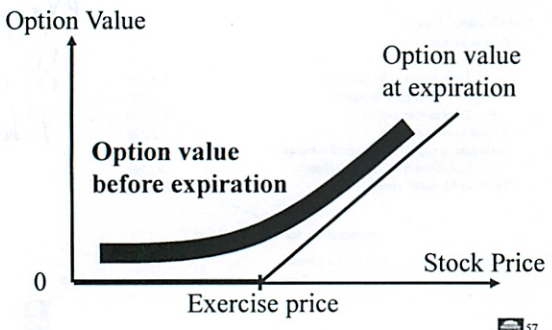
Combined statement of income and comprehensive income

Net sales	$xxx
CGS	xxx
Gross profit	$xxx
Operating expenses	xxx
Income from operations	$xxx
Other items	xxx
Income before taxes	$xxx
Income tax expense	xxx
Net income	$xxx
add OCI items	xxx
Comprehensive income	$xxx

Other - gains + losses
- hedges
- don't want volatility in income

56

Option Valuation



57

Current Accounting Rules for Options

To estimate stock option expense, on the grant date the firm must determine (estimate) the following:

- Market price of the stock
- Strike price
- Time between grant date & exercise date
- Risk free interest rate
- Expected stock price volatility
- Expected dividends

These values are inputs into option pricing formulae that allow the firm to estimate the fair value of the option on the grant date.

58

Accounting Rules for Employee Stock Options

The fair value of the option at grant is expensed over the vesting period with the other side of the entry being shareholders' equity

Compensation expense (retained earnings)	XXX	
Additional Paid-in Capital (stock options)		XXX

When the options are vested and the managers exercise their options at the stated price, cash is received from the managers, treasury stock is usually used for the shares received by the managers and any differential goes to Additional Paid-in Capital (APIC)

When employees exercise their options & pay the exercise price the entry is:

Cash	XXX	
Treasury Stock		XXX
APIC		XXX

59

GOOD LUCK

60