M&A

Value of Merged Firm: $V_{AB} > V_A + V_B$

Incremental net gain (Synergy):

$\Delta V = V_{AB} - (V_A + V_B)$

Value of Firm B to Firm A: $V^*_B = \Delta V + V_B$

Cash Flows: **ΔCF=ΔEBIT+ΔDep−ΔTax−ΔCapReq**

ΔCF=ΔRev−ΔCost−ΔTax−ΔCapReq

Rev = difference in revenue

Cost = difference in cost

Tax=difference in taxes

Capital Req=change in net fixed assets and NWC

NPV of merger: **NPV =V^*_B - Cost**

Value of Firm A after cash merger (combined firm): $V_{AB} = V_A + (V^*_B - \text{Cost})$

Value of Firm A after stock merger

(Combined firm): $V_{AB} = V_A + V_B + \Delta V$

Minimum economic value: offer cost - worth of acquired firm

Max Share Price=mkt share price+ (after tax benefit/shares o/s)

Goodwill=Purchase price/assets from acquired firm

EPS: NI/shares outstanding

EPS: Earnings/shares outstanding

Stock Transaction

Firm X, takeover firm Y by exchange. Firm X 1 share for every 4 shares of Y. Synergies $2500000 (not annually).

1. Exchange rate= 1 of x for every 4 y.
2. #shares given= 500000(Firm Y o/s) * (1/4) = 125000 shares
3. Total o/s after = 875000 (given) +125000 = 1m
4. $V_{XY} = V_X + V_Y + \Delta V = 200*875 + 42*50000 + 2.5m = 198.5m$
5. Price after = V_{XY}/# shares o/s =198.5/1m = $198.50
6. Premium = **(value of shares given to Y) - V_Y= 125000*198.50 - 42*50000 = $3813500m**

Y's SH offered ^stock deal or $48/share in cash. Exchange ratio?

1. Cash Value per share = stock value per share
   48= (Firm X's stock price)*(exchange ratio)
   48= 200* (exchange ratio)
   exchange ratio = 0.24

Cash Transaction

Firm A, takeover Firm B for $22 per share of B in cash. Synergy value $2000000 (not annually). NPV? Price per share? P/E ratio?

1. Find prices first.
2. Firm A: price = (P/E) (EPS) = 20*(3m/2.5m) =$24
3. Firm B: price = (P/E) (EPS) = 12*(1.25m/750000) =$20
4. $NPV_A = V^*_B - \text{Cash} = V_B + \Delta V - \text{Cash}$ = (20) (750000) +2m – (22) (750000) = $500000
5. Price after = V_{AB}/# shares o/s = (V_A+NPV)/2.5m = [(24) (2.5m) + 50000]/2.5m = 24.20
6. P/E ratio=Price/EPS =24.20/ [(3m+1.25m)/2.5m]=14.24

M&A EPS

X Voted in favour of buyout

Y, 2 shares of Y for every 5 of X.

Price per share combined firm for fool market EPS. P/E ratio.

1. #shares offered = (150000(X shares o/s))*(2/5) =60000
2. #shares o/s after = 480000(Y shares o/s) +60000 = 540000
3. Old EPS = 1.2m/480000=$2.50
4. New EPS = 1.7m (both earning combined)/540000=$3.14
5. $3.14 to $2.50 = 25.6% increase
6. Market fooled = P/E constant
7. 32(Y P/E ratio) =Price/EPS -> 32=Price/3.14 -> Price = 100.48
8. NPV = 0 = no value added, ∴X stays constant
9. Old Price = 32*2.50(old eps) = $80
10. P/E= price/EPS=80/3.14=25.48

OPTIONS & CORPORATE SECURITIES

Call – right to buy asset

Put – right to sell asset

S_1= stock price at expiration

S_0 = stock price today

C_1 =Value of the call option on exp. Date

C_0 = Value of call option today

E = exercise price of option

Total cost = #contracts (#share) (last price)

Payoff = #contracts (#shares) (expiration price - strike price)

Futures Price	$30	$32	$35	$38	$40	$43.24
Value of call	0	0	0	3	5	8.24
Value of Put	-5	-3	0	0	0	0
Total Value	-5	-3	0	3	5	8.24

Warrants:

Straight Bond Value = Calculate PV

Total Warrant Value = selling price - straight bond value

Price of 1 Warrant = total warrant value/# detachable warrants

Conversion Ratio = par value/conversion price

Conversion Value=Conversion ratio*(stock price)

Conversion Premium = (conversion price – stock selling price)/stock selling

~ The value of the call is the stock price minus the present value of the exercise price

Dutch Option: rank bids highest to lowest price. Divide amounts accordingly to bidder until adds to # shares

Last bid to get shares is the price shares will be sold at

% ea. = #shares firm is sell/sum of successful bidder quantities

Options

1) **Sell Call**: Exercise=$850/oz., Premium=$15/oz.

Intrinsic value for buyer (call) = max(S - E, 0)

~ Buyer benefits when S increases

~ Seller loses when S increases

Profit = P – max(S – E, 0)

= (1000) (15) – (1000) max (900---850, 0) = -35000 (seller loss)

2) **Buy Put**: Exercise$850/oz., Premium=$15/oz.

Put in intrinsic value = max (E - S, 0)

~buyer benefits when price decreases

Profit = max (E - S, 0) – P = 1000max (850 - 900, 0) 1000 (15) = -15000

Total Profit =

Options

Buy Call & Put Options: Exercise $30, P_c = $0.40, P_P=$3.60, S=8

Bought Call: profit = max(S - E, 0) – P

Bought Put: Profit = max (E - S, 0) – P

Total Profit= Bought Call + Bought Put

Convertible Bonds

$1000 FaceValue bond selling at $955. Conversion price $50. 6.5% semi-annual coupon. Yield at 9%, matures in 15 yrs. Sells for $60 per share. Floor price? Option value of bond?

1. min. price = max (SBV, conv value)
   SBV: N = 15*2=30, PMT= 32.50, FV= 1000, I=9/2=4.5%
   Calculate PV = 796.39
2. Conv Value = (conv ratio) (current stock price) = (1000/50) ($60) = 1200
3. Min. price = max (796.39, 1200) = 1200
4. Option value = selling price – SBV = 4158.61

RISK MANAGEMENT

Forwards contracts:

Long Position: to **buy** at future date

Profit = (contract size) (expiration price – initial price)

Profit when price increase

Loss when price decrease

Short Position: to **sell** at future date

Profit = (contract size) (initial cost – expiration price)

Initial contract value = last*contract size

Final contract value = price at exp. (given)*contract size

~Each contract is 100oz~

Initial Contract Value = (# contracts) (Contract size) (futures price)

Forwards & Futures

Worried about price decrease = short position in futures.

Own 1500 ounces, ea. contract is for 100 oz.

Need = 1500/100 = 15 contracts

~ Short (sell) futures

Locked in price = $921/oz.

At exp. S_T = $900

Short Profit= (# contracts) (contract size) (futures cost– exp. price)

Forwards & Futures

Benefit when price increase = long position

Locked in price = 1500/ton

Price at exp. = 1425/ton = LOSS

Long Profit= (#contracts) (contract size) (exp. price–future price)

RAISING CAPITAL

 # new shares to be issues = funds to be raised/subscription price

 # Rights needed to buy 1 share = # old shares/#new shares

Exright price= 1/ (N+1) x (N x initial stock price + subscription price)

Exright price (Px) = [N (old price) +Sub price]/ (N/+1)

Value of right = (M---S)/ (N+1)

Firm Commitment:

Underwriter Profit = (Selling price – cost) (#of shares)

Regular Underwriting:

Profit to firm = #shares*(selling – cost)

Profit to underwriter = (fee per share) (#shares)

NI = (ROE) (TE)

Book value per share **BVPS** = TE/shares

Like to issue IPO, firm commitment or reg. underwriting. Firm commit would buy all 200,000 shares, for $25. Reg. underwriting fee will be $3 per share. How much $ raise in firm commit if stock sells for $18. Profit?

Firm Commitment

1. Proceeds to firm = 200,000*25
2. Underwriter profit = 200000*(18 - 25) = -$1.4m

Reg Underwriting

1. Proceeds to firm = 200000*(18 - 3) = $3m
2. Underwriter profit = 200000*3 = $600000

If low demand only 50% sold @ $18

Proceeds to firm = 200000*25 = $5m

Underwriters profit = 0.5*200000*18 - $5m = -$3.2m

Reg Underwriting

Proceeds firm = 0.5*200000*(18 - 3) = 1.5m

Underwriters profit = 0.5*200000*3 = $300000

DIVIDENDS & DIVIDEND POLICY

Cash Dividend

Dividend Yield = Annual Div/Stock Price (% market price)

Payout Ratio = Annual Div/Earnings per share (%EPS)

Plowback Ratio = 1 – Payout Ratio

Dividend Payment Chronology

*Declaration Date: day dividend declared

*Ex-Dividend Date: 2 business days before date of record (if buy stock ON or AFTER this date,

will NOT receive
the dividend). Stock price drops by amount of the div
*Date of Record: Holders receive div
*Date of Payment: Cheques are mailed

Dividend Declaration Time Line & Stock Price Example

StockPrice = CurrentMarketPrice – Div

Stock price on (ex-div date):

StockPrice = CurrentPrice – Div (1---Tc)

Price of stock on prior day:

Price (PBD) = P – 3 x (1---0.12)

Dividends vs Dividend Policy

Dividends MATTER – the value of stock is based on PV of expected future dividends. Higher div preferred to lowe r div. Stock price rise if div/share at given date rise & held Constant. Dividend Policy may NOT matter – the decision to pay divs vs. retaining funds to reinvest in firm. If firm reinvests capital now, it will grow & can pay higher divs in the future.

Homemade Dividends

All equity, dividend of $72 next yr and liquidating div $14. 40 at end of yr 2. 100000 shares o/s share price $70, no taxes, discount rate 20%. Investor has 100 shares, generate equal div in each period.

1. PV = 70, N = 2, I =20%, PMT = calculate = 45.818
2. Investor wants 100*45.818 = $4581.82
3. Investor gets 100*72 = $7200
4. Use to buy shares Price at T_1 = 14.40/1.2 = $12
5. Investor buys 2618.18/12 = 218.18 shares

~ Let second Dividend = D

$70 = (8D/1.2^1) + (D/1.2^2)$

9.5094 = D

D= 2ND Dividend

∴First dividend = (8) (9.5094) = $76.0755

Investor wants = 100*76.0755 = $7607.55

Gets = 100*72 = $7200

Short = $407.55

Residual Dividend Policy

Company needs $5M for new investments, the D/E = 2/3 & NI = $4M, how much should it pay as dividend?

D/E = 2/3, so V = 5, D/V = 40%, E/V = 60% so, 5M x 0.40 = 2M is financed with debt

5M x 0.60 = 3M is financed with equity

Dividend – NI = Equity Financing à 4M – 3M = 1M

CAPITAL STRUCTURE

EPS_{CURR} = EBIT/#shares o/s

EPS_{Prop} = EBIT - Interest/new #shares o/s

EPS_{CURR} = EBIT/Equity

Degree of Financial Leverage (DFL)

DFL = % change in EPS/% change in EBIT

DFL = EBIT/EBIT – Interest

~Fin. Leverage (FL): extent to which a firm relies on debt

~Good = firm is profitable and EBIT is high, the level of leverage that maximizes SH's wealth

~Bad = as leverage increases, D/E increase & risk increases

Allequity firm w/ EBIT $100000, and COC 10%. 10000 shar es

o/s. borrowing $200000 to buyback shares. Interest rate on debt 5%, no taxes. **Cost of equity? WACC? Break-even EBIT?**

1. Find V_U= EBIT/R_U= 100000/0.1 = $1m
2. Price per share = value of firm/#shares o/s = $100
3. Shares Bought back = 200000/100 = 2000
4. # shares remaining = 8000
5. $V_L = V_U$ (M&M Prop I no tax)
6. Equity = V_L –D = $1m – 200000 = $800000
7. D/E ratio = 200000/800000=0.25
8. **Cost of equity** $R_E = R_U + (R_U – R_D)$ (D/E) = 11.25%
9. **WACC** = W_E R_E + W_D R_D = 10%

All equity, so it should not change. (M&M Prop II)

10. Break even EBIT Set $EPS_{AE} = EPS_{PROP}$
1. Solve EBIT.

Breakeven EBIT

Solve 1st:

EBIT – Interest – taxes=NI and shares o/s with EPS

All Equity Firm (unlevered):

(EBIT/old#shares)= [(EBIT−Interest)/ (new#shareso/s)]

Debt/Equity Firm (levered):

(EBIT−Interest/#shareso/s) = [(EBIT−Interest)/ (new#shareso/s)]

Interest = debt x interest

New shares os = old shares – shares repurchase

~after solving EBIT, if tax solve step 1 w/ tax to step 3

4. E=V_L – D = 680000 – 200000 = 480000
5. Price per share=480000/ (10000 - 2942(repurchaseshare) =$68
6. D/E= 200000/480000=0.4167
7. MM prop II w/ tax. Solve: R_E and then WACC

Example of EBIT

If

the EPS is 2/share, there are 400,000 shares outstanding, tax rate is 50%. What is EBIT?

EPS = NI/shares outstanding

EBIT = NI/ (1 – T_C)

~EBIT > B/E point, leverage is beneficial

~EBIT < B/E point, leverage will hurt

# of shares: Unlevered: A = E; equity/#sharesos = price per share

Levered: A= L+SE; MV/#shares os = price per share;

Homemade Leverage

Unlevered Firm (U)	Levered Firm (L)
Equity = $300,000	Equity = $150,000
Debt = $0	Debt = $150,000
EBIT = $50,000	EBIT = $50,000
Rd = 0	Rd = 5%
D/E = 1	D/E = 1
DPR = 100%	DPR = 100%
Tax = 0%	Tax = 0%

*You invested in 15,000 in levered firm (L)
*Company is levered but you want all equity firm

Step 1: Calculate returns in LEVERED firm:

1. What is amount div payable to SH?

NI = EBIT – Interest = 50,000 – (150,000x5%) = $42,500

2. How much will you get? (Dollar return)

= (Your invest in firm/Total V of equity) x Total div to be pd

= (15,000/150,000) x 42,500 = $4,250

3. What is the % return?

= Dollar return earned/your investment

= $4,250/15,000 = 28.33%

Step 2: Calculate returns in UNLEVERED firm:

1. Mimic the D/E ratio of L firm. Since firm U has no debt, you have to borrow another $15,000 from bank @ 5%
2. Sell investment in L firm. You will have equity of $15,00 0 and invest in U firm. Now investment is $30,000 in U fir m. 3. How much will you get? (Dollar return)

= (Your invest in firm/Total V of equity) x Total div to be pd

= (30,000/300,000) x 50,000 = $5,000

4. Your net dollar return:

= $5,000 – 750 = $4,250 [you paid interest of $750 = (15,000x5%)]

5. What is the net % return?

= Dollar return earned/your investment = 4,250/15,000 = 28.33%

Q. You own 1500 shares. Firm is all equity with 500000 shares @ $25 ea, EBIT is $1.5m borrowing $2500000 to buy back shares. Interest rate 10%, no taxes

You All Equity, firm debt:

1. Find debt % = 2500000/ (500000*25) = 20%
2. #shares to sell = (1500) (0.2) = 300
3. Proceeds = (300)*(25) = $7500
4. Total CF = (#shares left) (EPS) + Interest

EPS = (EBIT – Interest)/ (new # shares o/s)

= (1200) (3.125) + 750 = $4500

You Debt, firm all equity:

1. Firm D/E ratio = (2.5m)/ (12.5m−2.5m) = 0.25

12.5m = 500000 shares*$25

2. Your equity = (1500) ($25) = $37500
3. Need to borrow= $37500*0.25 = $9375 @ 10% interest
4. # shares = 9375/25 = 375 shares
5. Total CF = (new # shares) (EPS) – Interest = $4687.50

EPS = 1.5m/10000

MM Proposition I and II with NO TAX

1. **$V_U = V_L = E_L + DL$ *OR* $V_L=V_U$=EBIT/R_E**

- value of firm is NOT affected by changes in CS
- WACC will not change regardless of CS decision

2. **$R_E = R_A + (R_A - R_D)$ x D/E *OR* WACC= $W_ER_E + W_DR_D$**

-**R_A** is the "cost" of the firm's business risk (i.e., req. return on the firm's assets)

- **$(R_A – R_D)$ x D/E** is the "cost" of the firm's financial risk (i.e., additional return required by stockholders to compensate for risk of leverage)
- WACC is of firm is NOT affected by CS (iV is dependent o n WACC)
- RORR of investor increases with financial leverage and so, ROE will increase with financial leverage
- Cost of equity rises with use of debt

(cost of equity varies with D/E ratio of the firm)

MM Proposition I and II with TAX

****1 a) V_U = [EBIT (1 – T)/R_U] + D T_C**

****b) $V_L = V_U$ + D x T_C**

- Debt financing is beneficial with an extreme scenario of 100% debt financing
- WACC decreases with use of debt financing

2 a) WACC = (E/V) RE + (D/V) (R_D) (1 – T_C)

WACC = $W_ER_E + W_DR_D$ (1 - T_C)

b) $R_E = R_U + (R_U – R_D)$ (D/E) (1 – T_C)

ru – rate of return; rd= debt issue

- Interest tax is deductible, but dividend is not. This tax subsidy on interest (interest tax shield) increases the tendency of using debt
- When firm adds debt, it reduces

taxes, all else equal

Annual Tax Shield/PV Annual Tax Shield Example

With a $5,590, 7% coupon debt and 30% tax rate, what ar e the annual tax shield and PV of annual tax shield?

À Annual Tax Shield = 0.30 x 5580 x 0.07 = 117.18

à PV Annual Tax Shield = 117.18/0.07 = 1,674

Other Equations

$^bE = {^bA}$ (1+D/E)

VT = E+D+G+B…. = Vm + Vn

Assuming perpetual cash flows: V_U = EBIT (1 - T)/R_U

Or $V_L = V_U + DT_C$

V_L = D + E

$R_A = R_U = R_E$ unlevered firm = WACC unlevered firm

WACC

WACC = $W_ER_E + W_DR_D (1 - T_C) + W_PR_P$

Never use book value except in TWO cases:

1. Privately traded firm (no info about stock/bond)
2. Publicly traded firm (restructuring in capital structure so there is no info about stock/bond temporarily)

W_E = E/V = % financed w/ equity

E = MV of equity = # o/s shares x price per share

W_P = P/V = % financed w/ preferred stocks

P = MV of preferred stock = # o/s shares x price

W_D = D/V = % financed w/ debt

D = MV of debt = # o/s bonds x bond price

V = MV of firm = E + P + D

WACC EXAMPLE/CAPM

Equity Information:

50 million shares, \$80 per share, Beta=1.15, Market risk Premium = 9%, Risk-free rate = 5% Debt *Info:* \$1 billion in outstanding debt (face value)

Current quote = 110, Coupon rate = 9%, semi-annual coupons, 15 years to maturity, Tax rate = 40%

Calculate cost of equity:

5 + 1.15(9) = 15.35%

Calculate cost of debt:

N = 30; PV = -1100; PMT = 45; FV = 1000; CPT I/Y = 3.9268

RD = 3.927(2) = 7.854%

Calculate WACC:

WACC = 0.7843(0.1535) + 0.2157(0.07854) (1---0.40) = 13.06%

COST OF PREFERRED STOCK

$R_P = D/P_0$

After-tax COST OF DEBT

Calculate for I% and then, I% *(1 - corporate tax)

COST OF EQUITY

Dividend growth model

$R_E = (D1/P_0) + g$

$D_1 = D_0\ (1+g)$

NOTE: D_1 = anything to be paid/will be paid and D_0 = past/current

SML or CAPM

$R_E = R_f + \beta_E\ (E\ (R_M) - R_f)$

Risk premium = $(E\ (R_M) - R_f)$

Market return = R_M

CALCULATING 'G'

i) Compound growth rate: Years 2004, 2005, 2006, 2007, 2008 and dividends are 1.10, 1.20, 1.35, 1.40, 1.55

So, 1.10(1+g) 4 = 1.55 à (1+g) 4 = 1.55/1.10

(1+g) 4= 1.40 à 1+g = 1.401/4 à g = 8.95%

RULE:

As

long as ROR < WACC…accept the project. As long as IRR > WACC…accept the project

SUBJECTIVE APPROACH

If project more risky than firm: use discount rate > WACC I f project less risky than firm: use discount rate < WACC

RISK FREE PROJECT AND RROR

COC of a risk-free asset = the risk-free rate

COC for risky asset > risk-free rate or,

discount rate > risk-free rate

Required return = appropriate discount rate = COC

The COC depends on the risk of the investment, in other words, it depends on USES OF FUND, not on sources on fund.

It is based on the risk of the cash flows

COC of levered firm = cost of equity + cost of debt + cost of preferred stock

COC of unlevered = cost of equity

CAPITAL BUDGETING

5 yr. project. New machine \$2500000, result in \$775000 pre-tax. CCA 30%, salvage value \$250000. Initial investment \$20000. Tax dare 40%, discount rate 10\$. NPV? 1. PV (OCF) = PVA [(775000) (1---0.4), 10%, 5yrs] =\$1,762,716 2. Solve: PV (CCATS) = \$669340

3. PV (NCS) = -Initial Cost + PV (Salvage)

= -2.5m + 250,000 (as FV)/ $(1.1)^5$

4. PV (NWC) = -Initial Cost + PV (Recovered NWC (initial)) = -7582

5. Solve: NPV = PV (OCF) + PV (CCATS) + PV (NCS) + PV (NWC) 6. Greater than 0 = Buy.

Stock Split (5 for 3)

#shares o/s after = (8400) (5/3) = \$140000

New price = (50) (3/5) = \$30

OR

Value of equity = 84000*50 = \$4.2m

New price = 4.2m/140000=\$30

	Buyer of Call Option	Seller of Call Option	Buyer of Put Option	Seller of Put Option
Expects Price of Underlying Asset to:	Increase	Decrease	Decrease	Increase
Option Buyer will Exercise Only If:	S > X	Obligated to sell asset if buyer exercises option	X > S	Obligated to buy asset if buyer exercises optio
What Does it Mean if Option Buyer Exercises:	Buying underlying asset from option seller at a lower price than it's worth in the market → GOOD	Selling underlying asset to option buyer at a lower price than it's worth in the market → BAD	Selling underlying asset to option seller at a higher price than it's worth in the market → GOOD	Buying underlying asset from option buyer at higher price than it's worth in the market → BAD
Payoff if Option Buyer Does Not Exercise* **	0	0	0	0
Profit if Option Buyer Does Not Exercise	-C	C	-P	P
Payoff if Option Buyer Exercises	S – X	- (S - X)	X - S	- (X - S)
Profit if Option Buyer Exercises	S - X – C	C - (S - X)	X - S - P	P - (X - S)

*** Does not yet consider option price paid/received

S = underlying asset price, X = exercise (strike) price of the option,

C = call premium = price of the call option, P = put premium = price of the put option

IMPORTANT FORMULAS

Rule of 72: # of years = 72/annual rate

PV = 1000 x (annual rate/discount rate)

Equity Multiplier = Total Assets/Total Equity

Profit Margin = Net Income/Sales

Return on Assets = Net Income/Assets

Return on Equity = Net Income/Total Equity = ROE = Net Income/Sales x Sales/Assets x Assets/Equity = Profit Margin x Total Asset Turnover x Equity Multiplier

P/E Ratio = Price per share/Earnings per share

EAR = $[1 + (\text{quoted rate}/m)]^m - 1$

Market Capitalization = Current market price per share x number of shares outstanding

Of New Shares = Funds to be raised/Subscription price

g = (1 – Dividend Payout Ratio) x ROE

Capital Expenditures = E+D, Earnings – Equity = Dividend

coupon: 0.8*1000/2 = 40

Hedging = (Future Price + Ex. Price)/Strike Price

Hedging Profit or Loss = (Future Price – Ex. Price) x Amount of Item

MISC. EXAMPLES TAKEN

1. Moose Pastures Inc. is considering a rights offer to raise \$500,000. The stock currently sells for \$5.25/share and there are 1,493,425 shares outstanding. The underwriters believe that the issue will be completely taken up if the subscription price is set at \$4.50/ share.

How many rights will be needed to purchase a share of MPI at the subscription price?

\$500,000/ \$4.50 = 111,111 shares need to be issued.

1,493,425/111,111 = 13.44 rights needed to buy 1 share.

What is the ex-rights price?

[(13.44 (5.25) +4.5]/14.44 = \$5.20

What is the value of a right?

\$5.25- \$5.20 = \$0.05

Now assume that the underwriter charges a 7% spread on all funds raised. The firm still needs to raise \$500,000 for its operations. Based on this information, how many shares will need to be issued at \$4.50 in order to raise the needed funds?

Amount to be sold = 500,000/ (1-.07) = \$537,634.41

Number of shares = \$537,634.41/4.5 = 119474.31

2. Anderson Co. and Kaplan Co. have both announced IPO's at \$75 per share. One of the firms is undervalued by \$37.50 and the other is overvalued by \$37.50, but investors have no way to determine which is which. The price of each share will revert to its proper level by the end of the day. Undervalued issues are oversubscribed (there are more offers for shares than there are shares to sell) and orders are rationed proportionately, with investors only receiving 50% of their order. Overvalued issues are not oversubscribed. If you put in an offer, you get your full order. If an investor puts in an order for 1000 of each IPO, what will her first day profits be?

1000(-\$37.50) + (500) (\$37.50)] = -\$18,750

3. ABC Inc. is considering a takeover of DEF Inc. You have gathered the following information regarding the two companies.

	ABC Inc.	DEF Inc.
Price Earnings (P/E) Ratio	20	10
Shares Outstanding	2,000,000	1,000,000
Earnings	4,000,000	1,000,000

Assuming that ABC Inc. offers to pay \$12 per share in cash, for each share of DEF Inc. and assuming that the synergies are \$1,000,000 in total (NOT annually).

What is the NPV of the transaction for ABC Inc.?

NPV = -Price + Value = -12M +1M +10M = -1M

What will be the Price per share after the transaction is completed?

Price = Value/# of shares = (80M+10M+1M-1.2M)/2M = 39.50

What will be the price/earnings ratio after the transaction is completed, assuming the market correctly analyzes the transaction?

P/E = Value/Earnings = (Current value – NPV) / total earnings = 79M/5M = 15.8

4. You own 1,000 ounces of gold. It is currently the middle of July 2009. You are concerned that the Gold Price may decline over the next month. You wish to hedge this risk. You have been given the following information regarding the Gold Futures Contract.

Gold Comex

100 troy oz., US\$ per troy oz.; 10 cents = \$10 per contract

Month	Settlement Price/ounce
Aug 2009	900.00
Oct 2009	905.00
Dec 2009	911.00

In order to hedge this risk you should

Sell 10 Aug 2009 Gold futures contracts

5. On April 20th, 2009 you decide to sell 2 cocoa futures contracts. Details regarding the contract are shown below

Cocoa (CSCE)

10 metric tons, US\$ per metric ton; \$1 = \$10 per contract

Month	Settlement Price/Ton
Jul 2009	1320.00

At expiration the settlement price is \$1435.00 per ton.

What was the amount of your profit from the trade?

Profit = -115*10 * 2 = -2300

6. Example table for Earnings, # of shares, etc.

$\Delta V = V_{AB} - (V_A + V_B)$ = 10,516,000 – (7,500,000 + 2,667,500) = 338,500

$\gamma = (N_n)/(N_0 + N_n)$ = (150,000)/ (400,000 + 150,000) = 0.2727

B's Shareholders own = γV_{AB} = 0.2727 (10,516,000) = 2,868,000

A's Shareholders own = $(1 - \gamma)$ VAB = (1-0.2727) (10,516,000) = 7,648,000

$NPV_A = V_B^* - Cost$

$V_B^* = V_B - \Delta V$ = 2,667,500 + 338,500 = Most they should have paid

NPV_A = 3,016,000 – 268,000 = 148,000

$NPV_B = Cost - V_B$ = 2,868,000 – 2,677,500 = 190,500

$NPV_A + NPV_B = NPV_{AB}$ = 190,500 + 148,000 = 338,500

			Firm A	Firm B	Firm AB
1	Earnings		$1,000,000	$315,000	1,315,000
2	# Shares		400,000	150,000	550,000
3	EPS	(1)/(2)	$2.50	$2.10	$2.39
4	Share Price		$18.75	$17.85	$19.12
5	P/E Ratio	(4)/(3)	7.5x	8.5x	8x
6	MV	(2)x(4)	$7,500,000	$2,667,500	$10,516,000

7. Go buy futures on 1,000oz. of gold for Oct. delivery

F = 765

June Oct

F = 765 S_T = 780

a) Buy gold spot mkt @ 780

b) Close out long futures by going short futures @ 780

c) Λ = 780 – 765 = $15/oz.

8. Long call @ 80, short put @ 80

S_T = 72

S_T	Long Call	Short Put
72	0	-8
75	0	-5
80	0	0
85	5	0

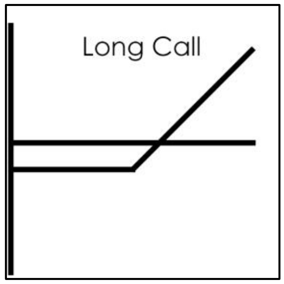
Cost = $(S_0 - C)$

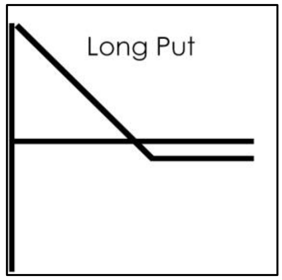
	$S_T \le x = 80$	$S_T > x = 80$
Long Call	0	$S_T - x$
Short Put	$-(x - S_T)$	0
Total Payoff	S_T - x	S_T - x

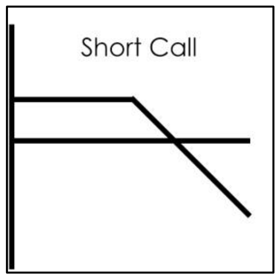
If S < X = "In the Money"

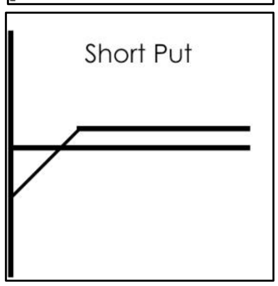
If S > X = "Out of the Money"

4 Basic Positions for Calls and Puts









American Option > European Option

PRE MIDTERM

Leasing Vs. Buying

NAL = Investment – PV(after-tax lease payments) – PVCCATS – PV(salvage)

PV(After-tax) = $CF_0 - [CF_1/(1 + r^n)] - [CF_2/(1 + r^n)]$

After-tax Lease Pmt = (Lease Payment)$(1 - T_C)$

After-tax Cost of Debt = r(1 – T)

	0	1	2	3	4
Invest	10000				
Lease P.	-2500	-2500	-2500	-2500	-2500
P. Shield	1000	1000	1000	1000	1000
Salvage					-500
Total CF	8500	-1500	-1500	-1500	-2000

Appropriate Discount Rate = After-tax cost of debt

WACC and NPV

WACC NPV = C + $[(CF/(1 + WACC)^1] + [(CF/(1 + WACC)^2] + [(CF/(1 + WACC)^3]$

PV = CF/WACC

NPV = PV – COST

PVCCATS = $[(C_DT_C)/(k + d)]\,[(1 + k/2)/(1 + k)] - [(S_DT_C)/(k + d)]\,[1/(1 + k)n]$

ΔNWC = Δ(CA – CL)

ΔNet Cash Flow = S – C – ΔNWC

$R_E = R_f + \beta$

Market Risk Premium = (return – R_f)

OCF = EBIT + Dep. – Taxes

OCF = Sales – Costs - Taxes

CCA Tax Shield = $(T_C)(d)$

EBIT = Sales – Cost – Dep.

$D_1 = D_0 \times (1 + g)$

IRR = Insert CF into List -> TVM -> F3 -> IRR