

Class / Week # 4: Financing of M&A

✓ Midterm:

- On Canvas
- 90 minutes, 5 questions from list of verbatim questions
- Exam window:

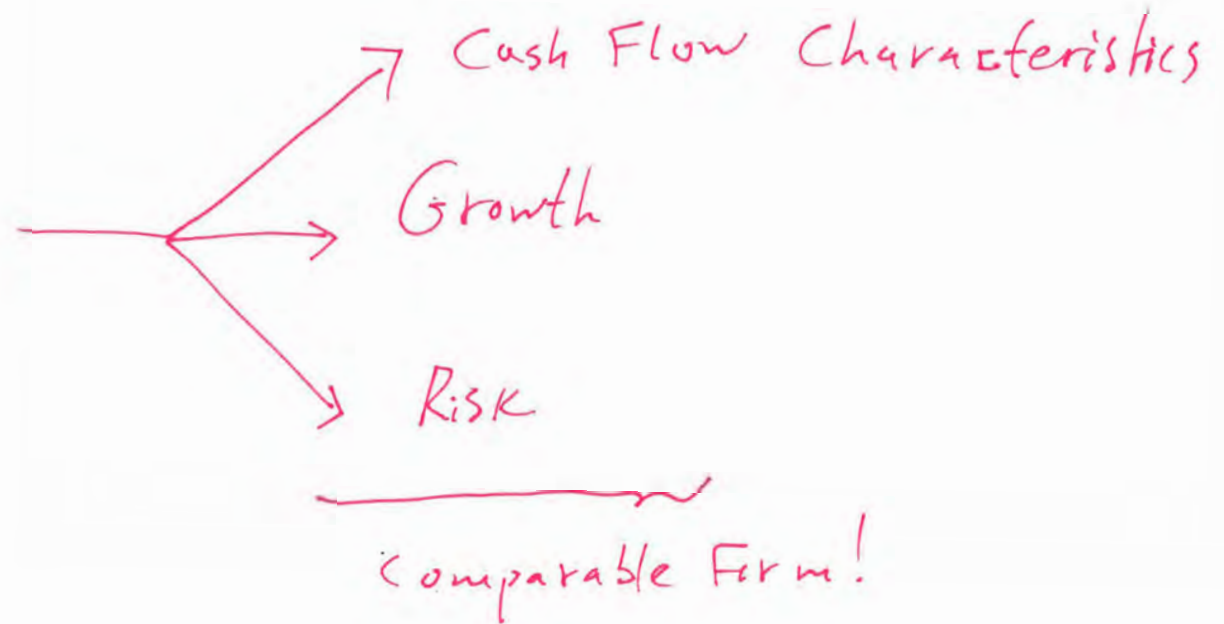
Friday, 9/17, 12:01 am CST - Sunday, 9/19, 11:59 pm CST, Zoom

- Office hours:

Friday, 9/17, 6-7:30 pm CST, Zoom

Discussion of
Example M&A case
(NOC acquisition of
AO)

comparability for relative valuation



Financing of Leveraged Buy Out

Deal Design II (Financing)

Sources of funding

- cash
- secured senior debt & secured short-term debt
- unsecured senior debt
- unsecured subordinated debt (a.k.a. mezzanine debt or junk debt)
- equity

ACME's LBO Example

$$\begin{aligned} \text{FCFF} &= \text{EBIT} - \text{EBIT} \times T + \text{Depr} \\ &\quad - \Delta \text{NWC} \sim \emptyset \\ &\quad - \text{Cap. Exp.} \sim \emptyset \end{aligned} \quad \left. \vphantom{\begin{aligned} \text{FCFF} &= \text{EBIT} - \text{EBIT} \times T + \text{Depr} \\ &\quad - \Delta \text{NWC} \sim \emptyset \\ &\quad - \text{Cap. Exp.} \sim \emptyset \end{aligned}} \right\} = \text{EBITD}_1$$

short-term capital maintenance $\leftarrow$

long-term capital maintenance $\leftarrow$

L.B.O. Financing: Example (Acme Co)

<u>SOURCES OF FUNDS</u>	
Excess Cash From Seller's Balance Sheet	\$ 5,000,000
Senior Secured Debt (Based upon 80% A/R and 50% Inventory)	\$ 15,199,000 (\$9,876,000 + 5,323,000)
Senior Unsecured Debt (Based on 2.5 times of 1 st yr. Projected Cash Flow)	\$ 54,447,500
Subordinated Convertible Debt	\$ 40,000,000
Total from Sources Other Than Equity	\$ 114,646,500
Amount of Equity to be Raised	\$ 42,203,000
TOTAL	\$156,849,500

From A/R
\$12.345 m
&
Inventory
\$10.645 m

} = 2.5 * predicted
EBITDA
in 2021 of
\$ 28.772 m

} determine
as difference
of available
debt funds

& total
purchase price

Resulting B/S Liabilities

LIABILITIES AND SHAREHOLDERS EQUITY

CURRENT LIABILITIES

	After Closing	Before Closing
Accounts payable	\$ 8,325	\$ 8,325
Accrued expenses	3,848	3,848
Revolving credit facility	15,199	6,256
Current portion LT DEBT		752
Total current liabilities	\$ 27,372	\$ 19,181

LONG TERM DEBT

Senior Unsecured Debt	54,448	
Subordinated Debt	40,000	
Total Long Term Debt	\$ 94,448	\$ 21,118

SHAREHOLDERS' EQUITY

Common stock	\$ 42,203	\$ 5,876
Additional Paid-in Capital		\$ 8,121
Retained Earnings		\$ 31,191
Total shareholders' investment	42,203	45,188

LIABILITIES & S-H EQUITY

\$ 164,023	←	\$ 85,487
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BOOK DEBT = 74%! ←

Example courtesy of J. Lehrer, WashU Law

$$E = \frac{42,203,000}{164,023,000}$$

$$1 - \frac{45,188}{85,487} = 47\%$$

Resulting B/S Assets

ASSETS

CURRENT ASSETS:

	After Closing	Before Closing
Cash and cash equivalents	\$ 5,393	\$ 5,393
Accounts Receivable, less allowances of \$420	12,345	12,345
Inventories	10,645	10,645
Prepaid Expenses	<u>1,272</u>	<u>1,272</u>
Total Current Assets	29,665	29,665

PROPERTY AND EQUIPMENT:

Land and land improvements	5,340	5,340
Buildings	23,948	23,948
Leasehold Improvements	2,327	2,327
Fixtures and equipment	22,375	22,375
Less-accumulated depreciation	<u>12,983</u>	<u>12,983</u>
	41,007	41,007

OTHER ASSETS

Cash surrender value of life insurance	575	575
Goodwill, net of amortization of \$3,560	<u>92,776</u>	<u>14,240</u>
Total Other Assets	<u>93,351</u>	<u>14,815</u>
	<u>\$ 164,023</u>	<u>\$ 85,487</u>

} the allocation
assumed
100% to
goodwill

Effect of M&A Financing on EPS

The effect of
the mode of payment {
in M&A (e.g. cash, stock,
or cash & stock)

Adj. Equity Value (Target)

or EPS of survivor corporation

Types of shares [issued & authorized
authorized

2,000,000

150,000

} authorized share,
are for example
those in restricted
stock or in
vested stock
warrants

SER

Stock
Exchange
Ratio

fixed

floating ✓

← more common to have
floating stock exchange
ratio, if the mode
of payment is stock
exchange

Authorized & Issued Shares = Outstanding Shares

Example of Adjusting Equity Value (from class)

(1) Stock-for-stock merger

$$\text{EPS combined firm} = \frac{(281.5 + 62.5)}{140,125}$$

$$= 2.46 \text{ \$/share}$$

A decrease from \$2.51

Why?

- no synergies
- buying a more expensive asset!

$$\text{PE}_{\text{TARGET}} = \frac{25.32}{3.33} = 84.30$$

Pre-Merger Data	Acquirer	Target
Net Earnings	\$281,500,000	\$62,500,000
Shares Outstanding	112,000,000	18,750,000
EPS	\$2.51	\$3.33
Market Price/Share	\$56.25	\$62.50

$$\text{PE} = 22.41$$

$$\text{PE} = 18.77$$

(3) Cash & Stock Merger

$$\text{EPS combined} = \frac{281.5 + 62.5 - 42.075 \times .6}{130.75}$$

$$= 2.44$$

⇒ diluted EPS!

Why?

- all reasons noted in (1) & (2)

When is dilution lowest?

(2) All Cash Merger (funded w/ debt @ 8%)

$$\Rightarrow \text{EPS combined} = \frac{281.5 + 62.5 - 126.45 \times .6}{112} = 2.39$$

⇒ diluted EPS! Why? - need pay interest for borrowed cash!

The example of cash-for-stock EPS
Calculation

$$\text{EPS} = \frac{281.5 + 62.5 - \overset{\text{if interest rate} = 1\%}{.01 * .60 * 1,580.625}}{112}$$

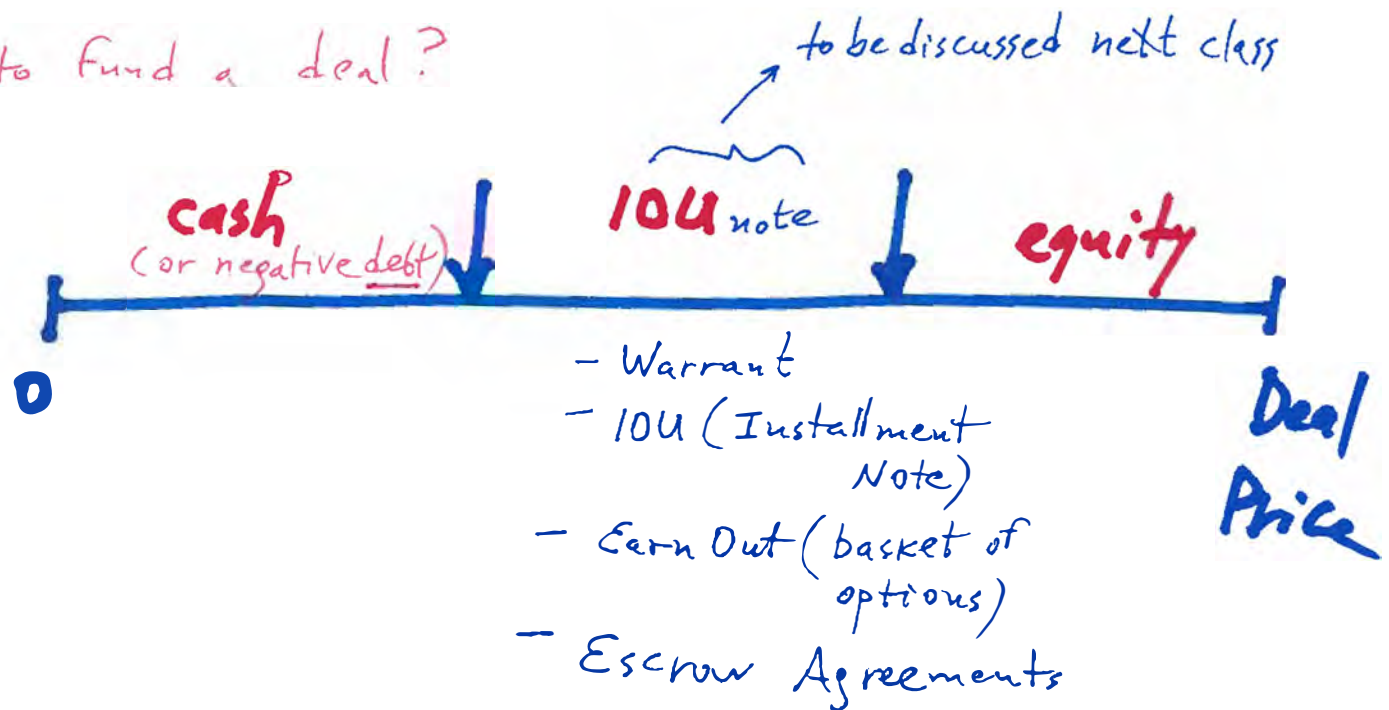
$$= 2.98 \text{ \$/share}$$

Merger has accretive effect on EPS!

Earn Outs

DISCUSSION OF CONTINGENT PAYMENTS

How to fund a deal?



Contingent Payments

- ✓ - Earnouts
- ✓ - Installment Notes
- ✓ - Stock-for-Stock payments
- ✓ - Exchange Ratio Determination
- ✓ - Collars in M&A
- ✓ - Escrow Agreements

(A profit sharing agreement)

Earn Outs: Example

- Parties agree to:

- Up-front: **\$2m**
- Plus Earn Out

– a basket of options on CF
w/ different strike prices &
different maturities

- Earn Out:

- Last 5 years

watermark #1 watermark #2

- Seller receives all profits > \$250K (yr #1), \$500K (yr #2)
\$1,250K (yr #5)

- Buyer gets everything below cut off values & all profits after
yr # 5

So seller receive upside of watermark for 5 years.

⇒ has incentives to (1) be truthful in disclosing growth estimates &

- What is earn out value for buyer & seller? (2) work hard to meet set goals.

- To bridge valuation gap:

- Buyer valuation (3m) > value of buyer (earn out) payment
- Seller valuation (5m) < value of seller (earn out) receipts

These are the individual rationality
... for buyer & seller.

Basket
of
options

Valuation of the earnout contract

Earn Out Example: (Optimistic) Target (seller)

				TARGET					
Base Year Sales			\$10,000						
Earnout Period, in Years			5		Year 1	Year 2	Year 3	Year 4	Year 5
Sales					\$ 11,500	\$ 13,225	\$ 15,209	\$ 17,490	\$ 20,114
Growth Rate	min		10%						
	most likely		15%		15%	15%	15%	15%	15%
	max		20%						
				if correct, these estimates					
Operating Income				\$	1,150	\$ 1,323	\$ 1,521	\$ 1,749	\$ 2,011
Profit Margin	min		5%						
	most likely		10%		10%	10%	10%	10%	10%
	max		15%						
				imply value of \$ 5.482 m > \$ 5 m					
Earnout Target				\$	250	\$ 500	\$ 750	\$ 1,000	\$ 1,250
Annual Earnout Value				\$	900	\$ 823	\$ 771	\$ 749	\$ 761
PV (Earnout)									
Discounted @			5%	\$	3,482				
\$ at Closing				\$	2,000				
Valuation Total Payment				\$	5,482				

✓ Seller valuation (5m) < value of seller (earn out) receipts, \$5.48m

Valuation of the earnout contract

Earn Out Example: (Skeptical) Acquirer

(Buyer)

				BUYER		(Buyer)				
Base Year Sales			\$10,000							
Earnout Period, in Years			5	Year 1	Year 2	Year 3	Year 4	Year 5		
Sales				\$ 10,500	\$ 11,025	\$ 11,576	\$ 12,155	\$ 12,763		
Growth Rate	min		0%							
	most likely		5%	5%	5%	5%	5%	5%		
	max		10%							
Operating Income				\$ 525	\$ 551	\$ 579	\$ 608	\$ 638		
Profit Margin	min		0%							
	most likely		5%	5%	5%	5%	5%	5%		
	max		10%							
Earnout Target				\$ 250	\$ 500	\$ 750	\$ 1,000	\$ 1,250		
Annual Earnout Value				\$ 275	\$ 51	\$ -	\$ -	\$ -		
PV (Earnout)										
Discounted @			5%	\$ 308						
\$ at Closing				\$ 2,000						
Valuation Total Payment				\$ 2,308						

If correct, these estimates

imply total value to buyer of \$2.308m

\$3m buyer valuation

If correct, these estimates

imply total value to buyer of \$2.308m

\$3m buyer valuation

✓ Buyer valuation (\$3m) > value of buyer (earn out) payment, \$2.3m

If so useful, why earn outs are not ubiquitous?

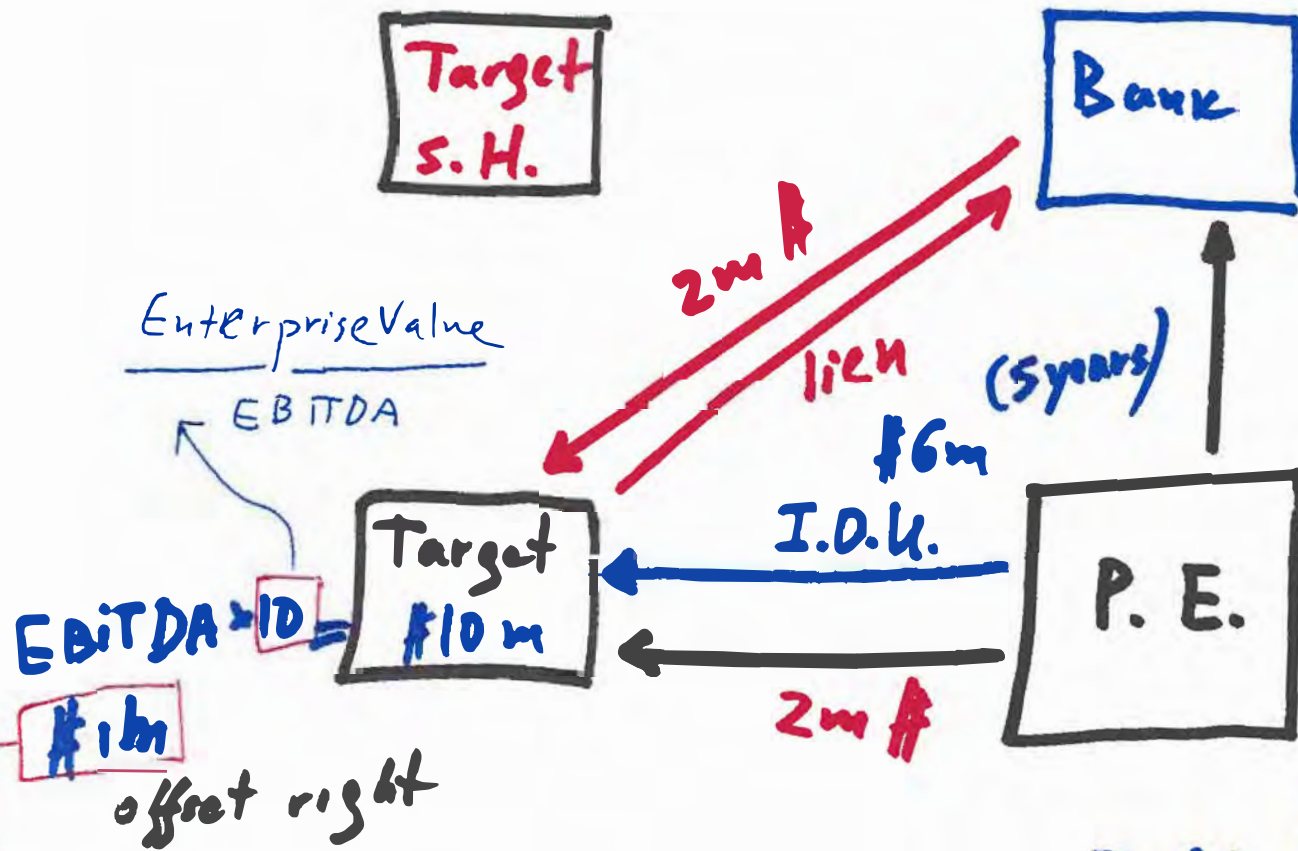
Installment Notes

P. E. Purchase by

(a.k.a. Installment Note

"Take Back Note"

(I.O.U.)



Total price
 $10m = 1m \text{ EBITDA} \times 10$

consensus $\frac{\text{Ent. Val.}}{\text{EBITDA}}$
 multiple in the industry

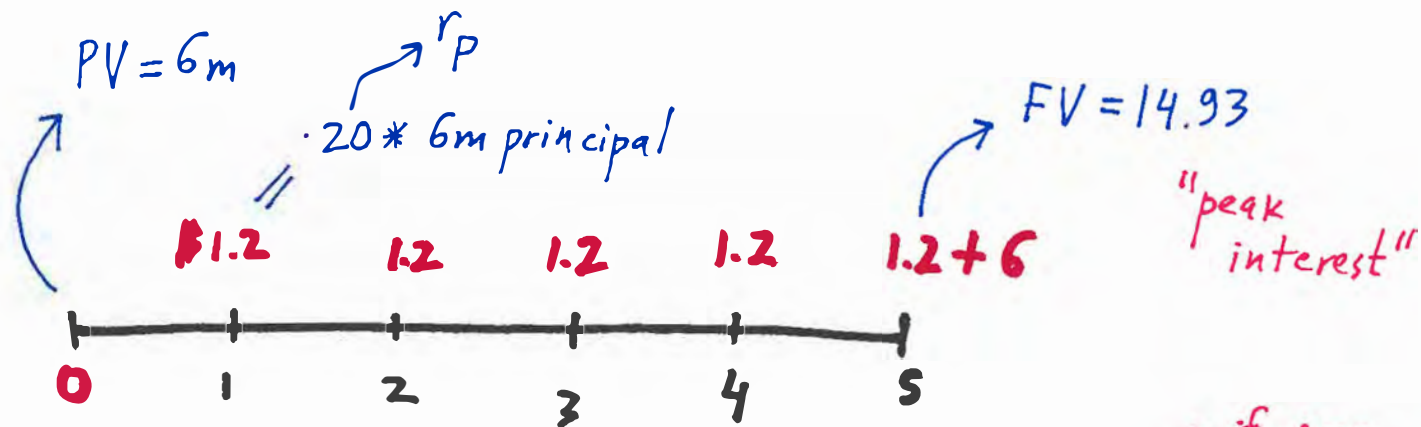
suppose instead it is discovered that $\text{EBITDA} = .5m \Rightarrow$
 Price should be $.5 \times 10 = 5 \text{ million } \$ \Rightarrow$
 difference to be offset through I.O.U.

$r_A = 35\% \Rightarrow r_P = 20\%$ ("take back note")
 $\$1.2m / \text{year}$
 "peaked interest"

REV. RUL. 2021-7 TABLE 1

Applicable Federal Rates (AFR) for April 2021

	Annual	Period for Compounding		
		Semiannual	Quarterly	Monthly
<u>Short-term</u> (up to 3 years)				
AFR	0.12%	0.12%	0.12%	0.12%
110% AFR	0.13%	0.13%	0.13%	0.13%
120% AFR	0.14%	0.14%	0.14%	0.14%
130% AFR	0.16%	0.16%	0.16%	0.16%
<u>Mid-term</u> → (up to 9 years)				
AFR	0.89%	0.89%	0.89%	0.89%
110% AFR	0.98%	0.98%	0.98%	0.98%
120% AFR	1.07%	1.07%	1.07%	1.07%
130% AFR	1.16%	1.16%	1.16%	1.16%
150% AFR	1.34%	1.34%	1.34%	1.34%
175% AFR	1.57%	1.56%	1.56%	1.55%
<u>Long-term</u> → (over 9 years)				
AFR	1.98%	1.97%	1.97%	1.96%
110% AFR	2.18%	2.17%	2.16%	2.16%
120% AFR	2.37%	2.36%	2.35%	2.35%
130% AFR	2.58%	2.56%	2.55%	2.55%



"Peak Interest" $\left\{ FV_{6m} = 6m \times 1.2^5 = 14.93m \right.$

new $FV(10U) = 14.93m \#$

I.R.S. will still impose interest income, equivalent to A.F.R. on the principal!

A.F.R. = Applicable Federal Rate
= 0.48% (Dec 2020)

if $AFR = .48\%$
 $\Rightarrow$
 $N = 5$
 $1/y = .48\%$
 $PMT = 0$
 $PV = -14.58$
 $FV = 14.93$

So, instead of 5-year IOU with $r_p = 20\%$, and principal of $\$6m$, the private equity would offer principal value of $14.93m \#$ with no interest payment (zero coupon bond)

The private equity firm has the right to offset this balance with any recourse claim for breach of the representations & warranties by seller.

$\Downarrow$
 contract
 $IOU = 14.58$
 & interest payments of
 $0.48\% \times 14.58 =$
 $= 69,984\#$

Exchange Ratios in M&A

Larson- Gonedes (1969) model

$$ER = \# \text{ sh. acquired} / 1 \text{ sh. target}$$

How to set exchange ratios in stock-for-stock acquisitions?

The Model of
Larson & Gonedes
(1969)

$$P_{\text{COMB}} \geq P_B$$

So, in equilibrium a buyer will be willing to enter a merger only if the price is anticipated to increase.

By definition

$$P_{\text{COMB}} \equiv \text{EPS}_{\text{COMB}} * PE_{\text{COMB}}$$

$$P_B \leq \frac{(E_B + E_T + E_{\text{SYN}})}{S_B + S_T * ER_B} * PE_{\text{COMB}}$$

This is the derivation of the maximal acceptable ER for the buyer
Transforming above, we get:

$$ER_B \leq \frac{[E_B + E_T + E_{\text{SYN}}] PE_{\text{COMB}}}{S_T P_B} - \frac{S_B}{S_T}$$

$$P_{\text{comb}} \geq P_B$$

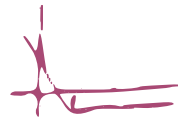
↓

$$EPS_{\text{comb}} * PE_{\text{comb}} \geq P_B$$

$$\frac{(E_B + E_T + E_{\text{syn}})}{S_B + S_T * (ER_B)} * PE_{\text{comb}} \geq P_B$$

Collars

Long
Put

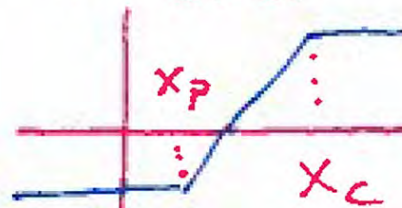


Short Call

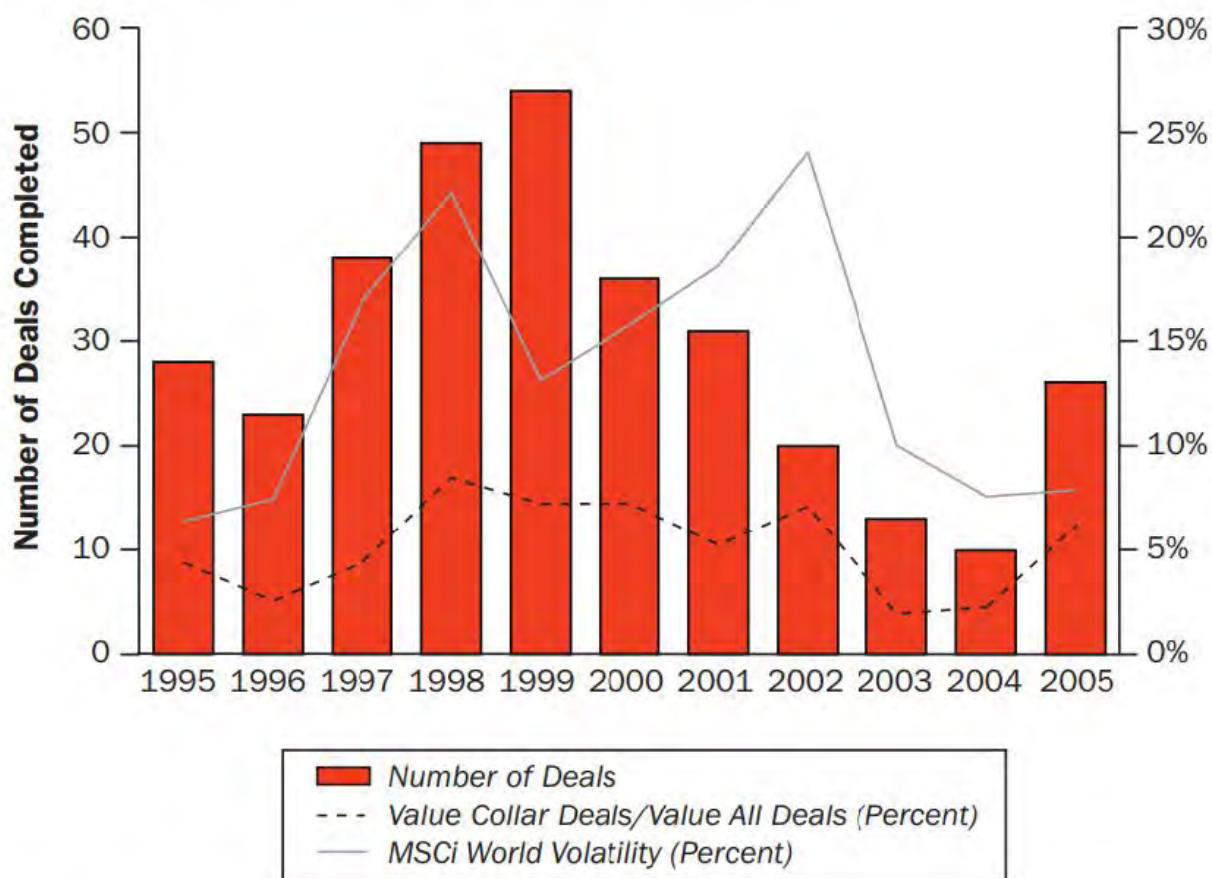


$$X_{\text{put}} < X_{\text{call}}$$

collar



Collar Incidence and Share in Global M&A Deals



Source: Securities Data Company, FactSet

Collars - to be discussed in deal design III

Discussion is in the context of merger arbitrage gross spreads calculation

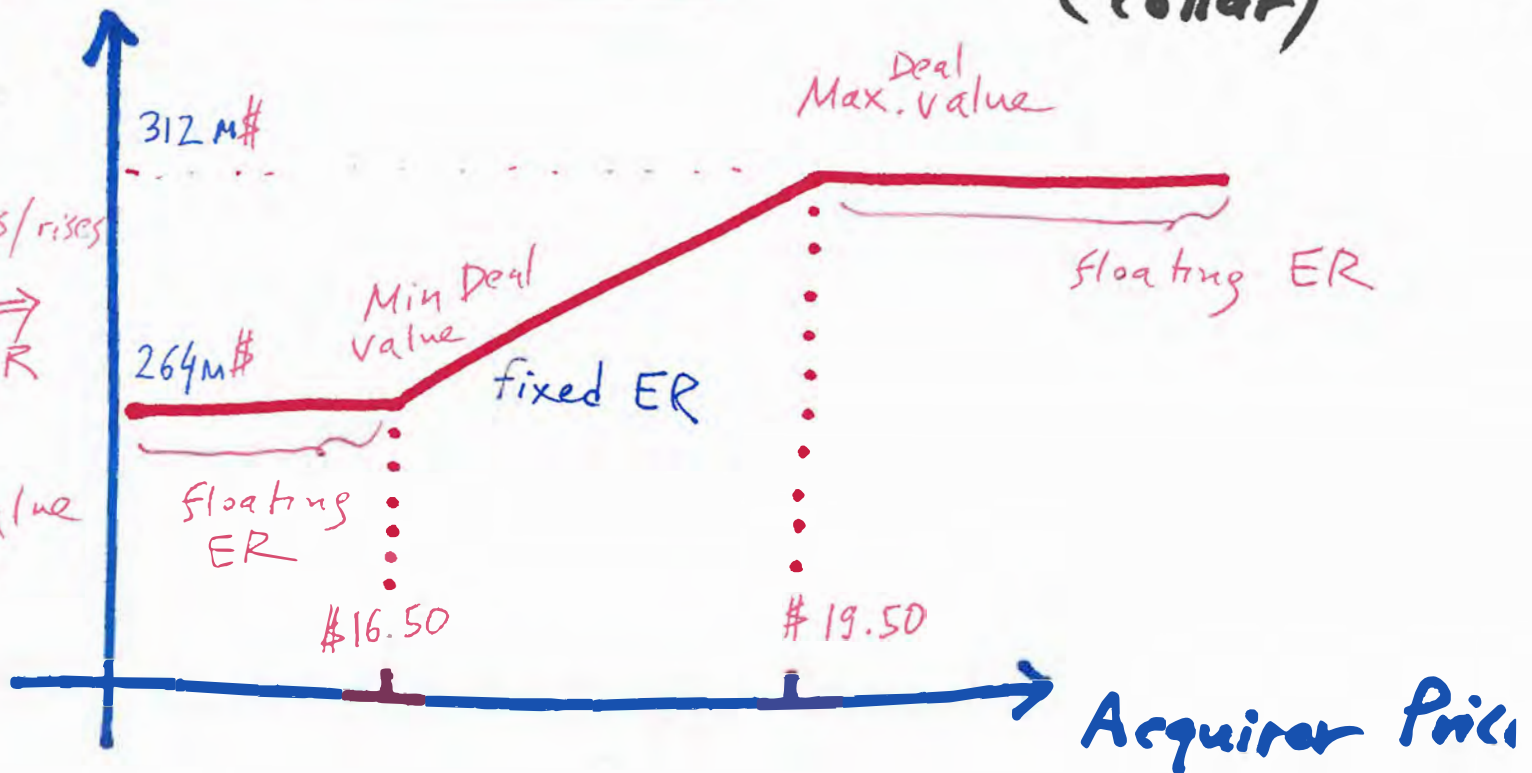
Note exchange ratios (ER) is either (i) fixed (ii) floating (iii) set within range (collar)

Example of Fixed ER & collar

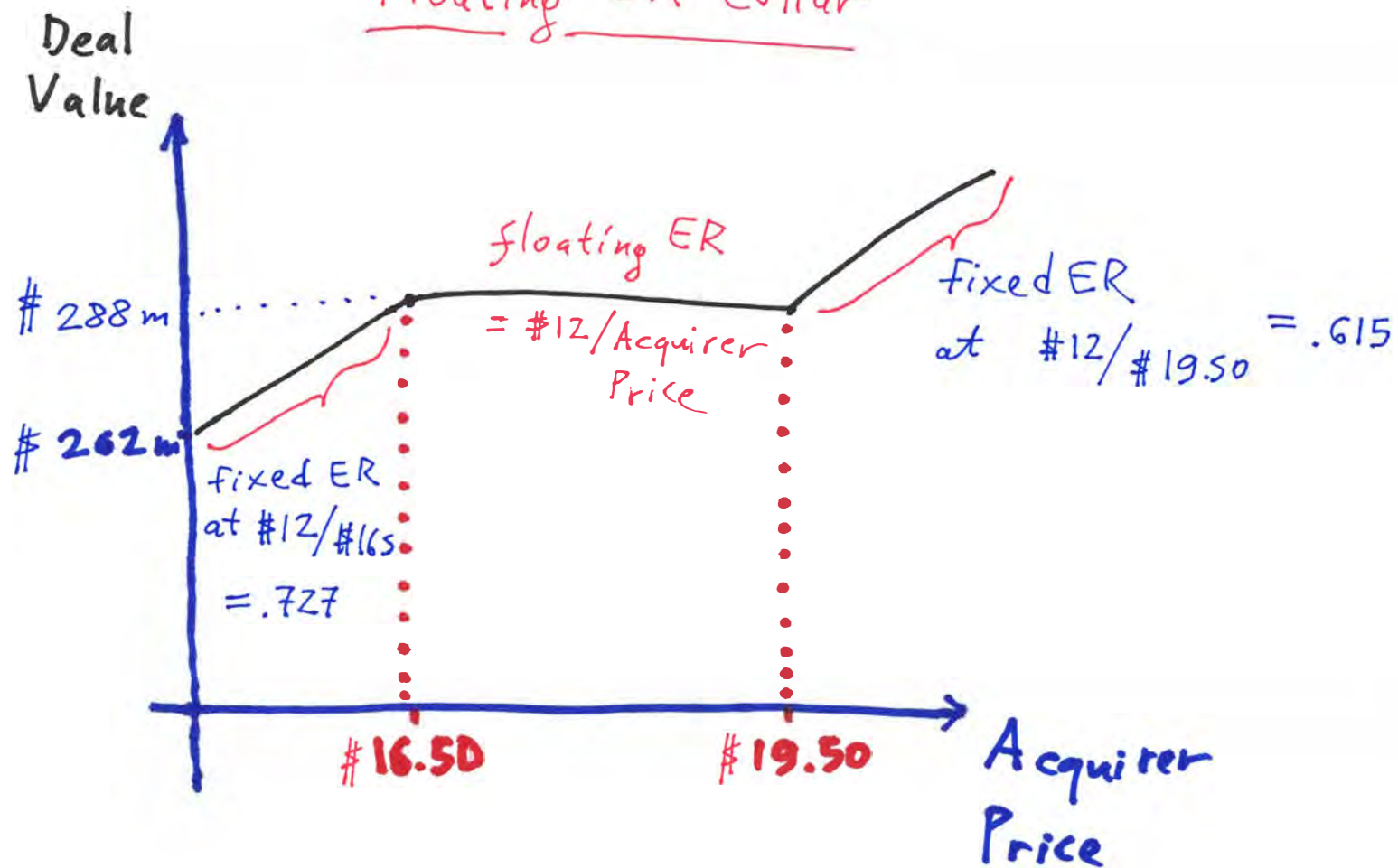
Deal Value

If buyer's price falls/rises beyond certain level $\Rightarrow$ switch to floating ER

$\Rightarrow$ so seller is guaranteed deal value between 264m\$ and 312m\$



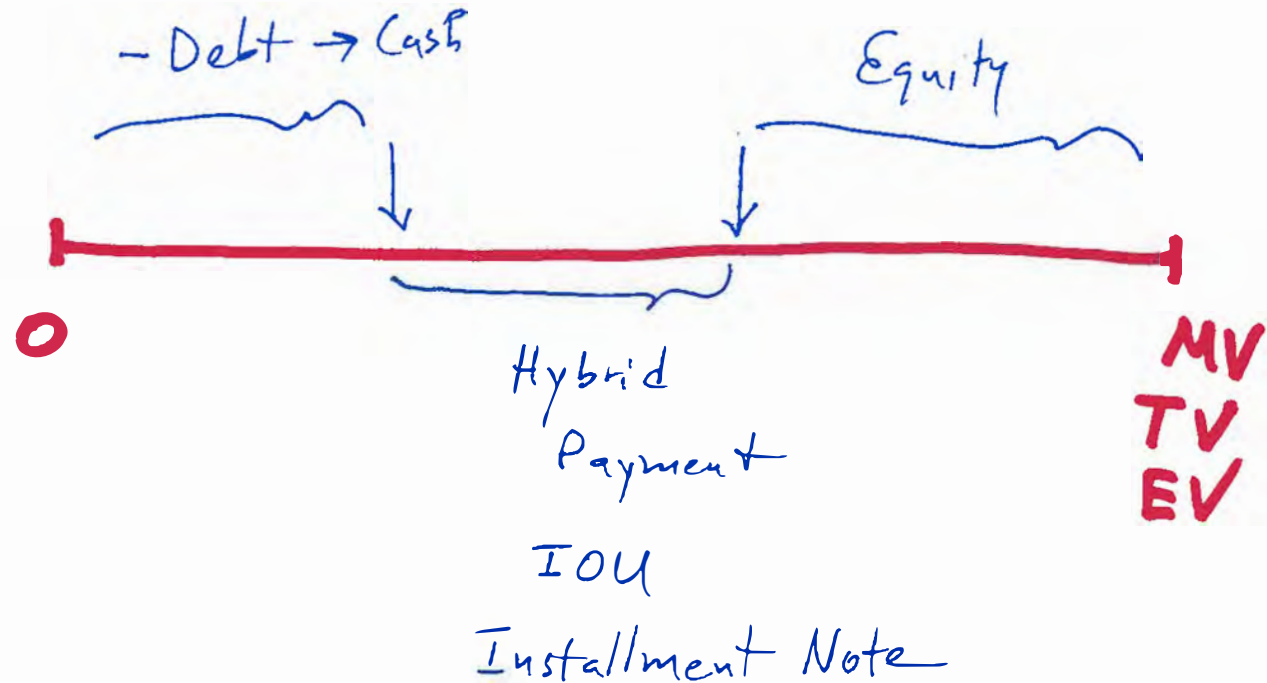
Floating ER Collar



Preference of sellers for ER formats:

1. Floating ER
2. Floating ER Collar
3. Fixed ER Collar
4. Fixed ER

Revisiting the discussion of payment mechanisms in M&A



Make-up Quiz #4 (Week #4) for FIN 5372

✓ Question #1 (0.5 pts)

In order for an earnout contract to be successful, it is necessary that:

- ✓ A. Buyer's private valuation exceeds the value of the earn out to the buyer
- ✓ B. Seller's private valuation is less than the value to seller of the earn out
- ✗ C. Buyer's private valuation is less than then value of the earnout to the buyer
- ✗ D. Seller's private valuation exceeds the value to seller of the earn out
- E. A and B
- F. C and D

✓ Question #2 (0.5 pts)

In a fixed exchange ratio collar, if acquirer's share prices fall or rise beyond a certain point, the transaction switches to a fixed exchange ratio.

- A. True
- B. False

✓ Question #3 (1 pts)

In the all cash example from the lecture, what will be the new EPS for the combined firm if the interest rate on the loan is 0%?

- ✓ A. EPS increases to \$3.07
- B. EPS remains at \$2.51
- C. EPS decreases to \$2.39

✓ Question #4 (0.5 pts)

In the slide set example of setting exchange ratios (i.e., ERs), what is the maximally acceptable acquirer ER (i.e., ER_B) and the minimally acceptable seller (i.e., ER_S) if $PE_{COMB}=14.52$ and is the deal possible at those ERs?

- A. $ER_B=1.17$ & $ER_S=0.44$; yes, the deal is possible
- B. $ER_B=1.17$ & $ER_S=0.44$; no, the deal is not possible
- C. $ER_B=0.33$ & $ER_S=1$; yes, the deal is possible
- D. $ER_B=0.33$ & $ER_S=1$; no, the deal is not possible

✓ Question #5 (1 pts)

Suppose that in the example from the slide set presenting an example of a leveraged buyout the two parties agree that the discount rate is 15% and therefore the enterprise value is \$211.911 million. What will be the total funds needed at closing?

- A. \$156,849,000
- B. \$211,911,000
- C. \$216,911,000
- D. \$221,649,966
- E. None of the above

Question #6 (0.5 pts)

A transaction is a win-win for buyer and seller if the exchange ratio is set above the minimally acceptable a ^{co}quirer exchange ratio and below the maximally acceptable target exchange ratio?

- ~~A. True~~
- ✓ B. False