Semester notes. Lecture 7 onwards:

Forms of payment and exchange ratio setting:

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[redacted]

From the buyer's perspective, take the same value-creation proposition:

$$P_{12} \geq P_1$$

$$P_1 = \frac{DCF_{12}}{S_1 + S_2 \times ER_1}$$

$$\boxed{ER_1 = \frac{DCF_{12}}{P_1 \times S_2} - \frac{S_1}{S_2}}$$

And for the target, similarly find value preservation condition and solve for ER_2

$$P_{12} \times ER_2 \geq P_2$$

$$P_{12} = \frac{DCF_{12}}{S_1 + S_2 \times ER_2}$$

$$\boxed{ER_2 = \frac{P_2 \times S_1}{(DCF_{12} - P_2 \times S_2)}}$$

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Finding the bidder's maximum ER

$$P_1 = PE_{12} \times EPS_{12}$$

$$EPS_{12} = \frac{E_1 + E_2 + E_{syn}}{S_1 + S_2 \times ER_1}$$

$$P_1 = \frac{PE_{12} \times (E_1 + E_2 + E_{syn})}{S_1 + S_2 \times ER_1}$$

$$\boxed{ER_1 = \frac{PE_{12} \times (E_1 + E_2 + E_{syn})}{P_1 \times S_2} - \frac{S_1}{S_2}}$$

- Proposition: A deal is good t the bidder if $P_{12} \geq P_1$
- Need: Price (P), earnings (E), shares on issue (S), PE of merged entity
- Consider the break-even point
- Rearrange and solve for ER

Finding the target's minimum ER

$$P_{12} \times ER_2 \geq EPS_{12}$$

$$P_{12} = PE_{12} \times EPS_{12}$$

$$P_2 = PE_{12} \times EPS_{12} \times ER_2$$

$$EPS_{12} = \frac{E_1 + E_2 + E_{syn}}{S_1 + S_2 \times ER_2}$$

$$\boxed{ER_2 = \frac{P_2 \times S_1}{PE_{12} \times (E_1 + E_2 + E_{syn}) - P_2 \times S_2}}$$

- From the target's perspective, a winning deal is one where their equity value in NewCo is greater than the value of their existing equity
- Again, consider the break-even point and rearrange to solve for ER

Example: Aqua is acquiring Blue with 100% scrip

Aqua share price = $60

Blue share price = $40

Aqua f'cast earnings = $300

Blue f'cast earnings = $250

Expected earnings gains from synergies = $1

Aqua and Blue both have 100 shares on offer

P/E of post-deal entity = 20

- What is the maximum ER Aqua should offer?
- What is the minimum ER Blue should accept?
- Is there a zone of potential agreement in this deal?
- What is the effect of a lower/high P/E on the post-deal entity?

[redacted]

zone of potential agreement	
={PE12*(E1+E2+Esynergy)/(P1*S2)}-(S1/S2)	=(P2*S1)/{PE12*(E1+E2+Esynergy-(P2*S2)}

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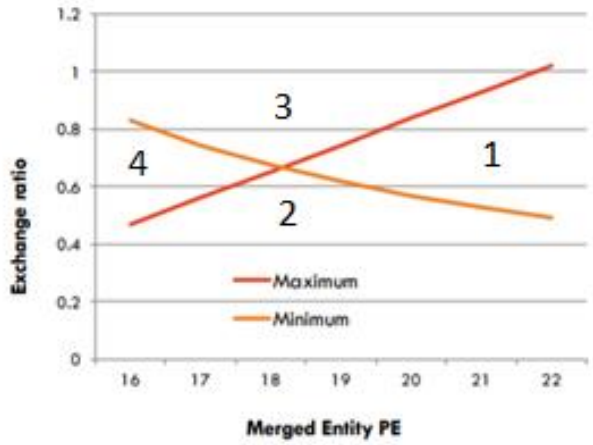

Two boundary conditions, four deal "zones"

- There are four possible outcomes based on the deal boundaries:

1. Win-win (the "ZOPA")
2. Bidder wins (ER < ER_{max}) and Target loses (ER > ER_{Min})
3. Bidder loses (ER < ER_{max}) and Target wins (ER > ER_{Min})
4. Lose-lose: Bidder loses (ER < ER_{max}) and Target loses (ER > ER_{Min})

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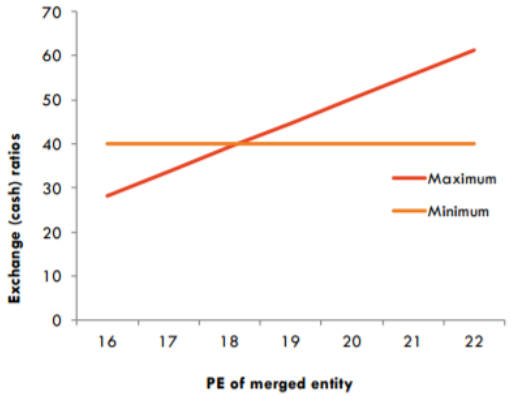
Extension – Optimal ER modelling in cash transactions



We can also calculate the buyer's and seller's ER boundaries for cash transactions. In a cash transaction, there is no synergy realisation risk to the target shareholders, so their minimum 'ER' in a cash deal is fixed.

- In the buyer's case the maximum condition is given by: $ER_1 = \frac{DCF_{12} - P_1 S_1}{S_2}$

  or $ER_1 = \frac{PE_{12}(E_1 + E_2 + E_{Synergies}) - P_1 S_1}{S_2}$

- And for the target, there is no post-merger risk:

$$\frac{Cash}{S_2} = P_2$$

Model summary

	Buyer's Maximum Acceptable Exchange Ratio	Target's Minimum Acceptable Exchange Ratio
Shares for Shares (P/E Boundaries)	$ER_1 = -\frac{S_1}{S_2} + \frac{E_1 + E_2 + E_{Synergies}}{P_1 S_2} PE_{12}$	$ER_2 = \frac{P_2 S_1}{PE_{12}(E_1 + E_2 + E_{Synergies}) - P_2 S_2}$
Shares for Shares (DCF Boundaries)	$ER_1 = \frac{DCF_{12} - P_1 S_1}{P_1 S_2}$	$ER_2 = \frac{P_2 S_1}{DCF_{12} - P_2 S_2}$
Cash for Shares (P/E Boundaries)	$ER_1 = \frac{Cash}{S_2} = \frac{PE_{12}(E_1 + E_2 + E_{Synergies}) - P_1 S_1}{S_2}$	$ER_2 = \frac{Cash}{S_2} = P_2$
Cash for Shares (DCF Boundaries)	$ER_1 = \frac{Cash}{S_2} = \frac{DCF_{12} - P_1 S_1}{S_2}$	$ER_2 = \frac{Cash}{S_2} = P_2$

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Risk management

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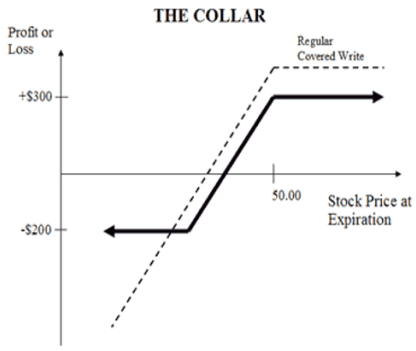
	Pre-closing market risk	Post-closing operating risk
All-Cash deal		
Acquirer	All	All
Seller	None	None
Fixed-Share Deal		
Acquirer	Expected percentage of ownership	Actual percentage of ownership
Seller	Expected percentage of ownership	Actual percentage of ownership
Fixed-Value Deal		
Acquirer	All	Actual percentage of ownership
Seller	None	Actual percentage of ownership



Collars are option trading strategies involving a long put and a covered short call

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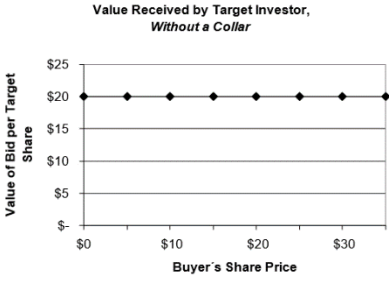

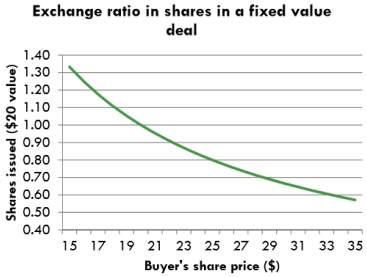

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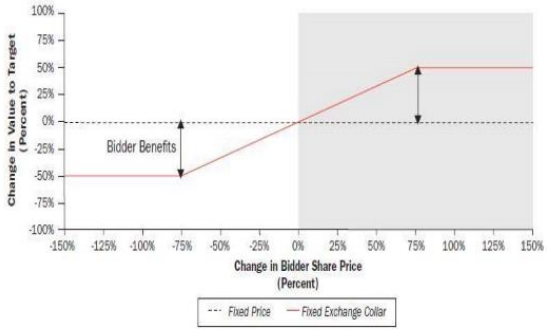

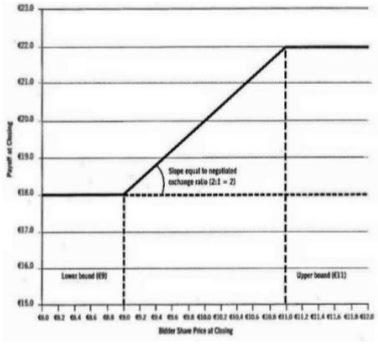

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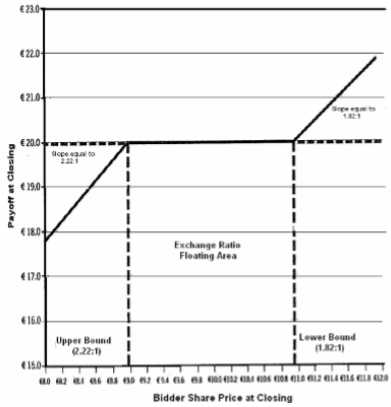

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Hostile takeover:

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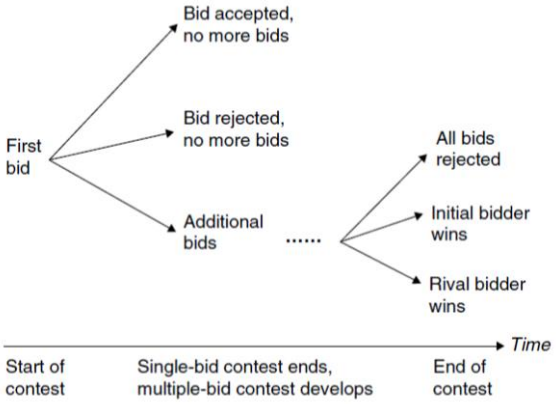

Type	Tactics
Proactive defence	•Financial improvement defence •Charter amendments •Golden parachutes •Poison pills, poison puts •ESOPs, DRPs etc
Reactive defence	•Pac-Man defence •Restructure •White knight, white squire •Share repurchase, greenmail •Litigation, protectionism
Deal-embedded defence	•Break up fees •Asset lock-ups •Toehold stakes •Matching rights

[redacted]

Charter/Bylaw Defenses
Add Exclusive Forum Provision
Change Vote Requirement to Elect Directors to Majority from Plurality
Modify Advance Notice Requirements
Declassify the board
Add Derivative Disclosure in Advance Notice Requirements
Decrease Difficulty to Remove Directors (With/Without Cause)
Add Ability for Shareholders to Call Special Meetings
Add Advance Notice Requirements
Add Ability/Reduce Threshold for Shareholders to Take Action by Written Consent
Eliminate Supermajority Vote Requirement to Amend the Charter/Bylaws

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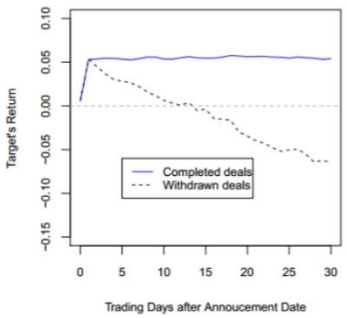
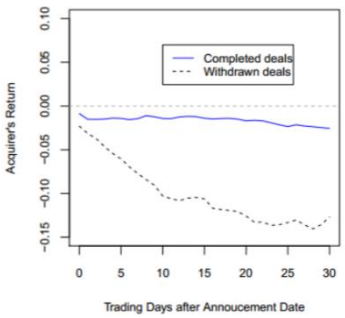
Merger Arbitrage:





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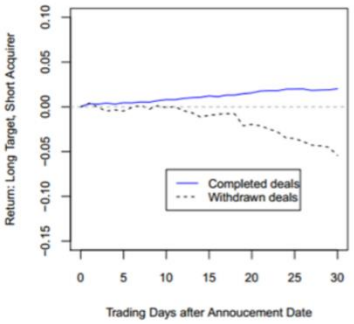

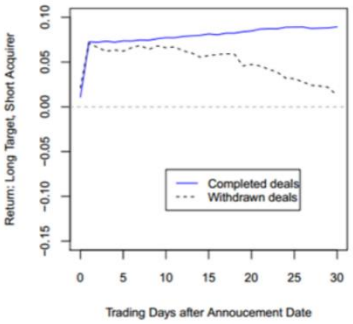

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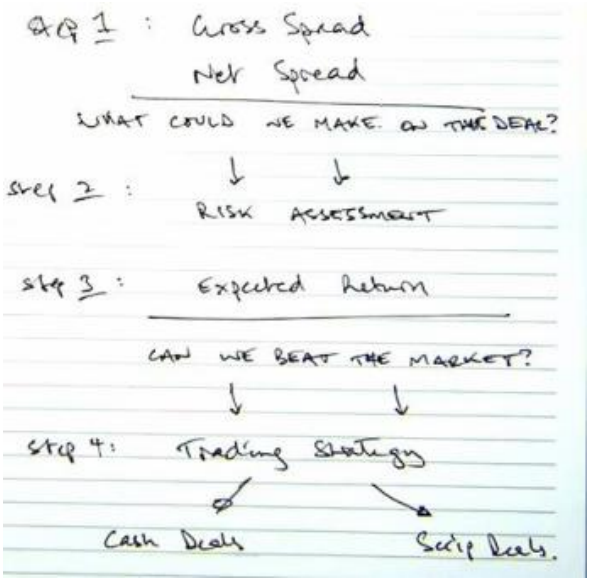

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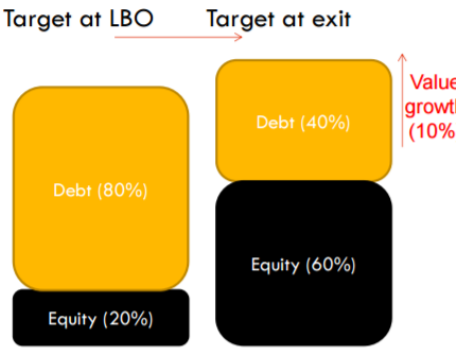
PANEL A: Cumulative Average Abnormal Returns [-1, 1]		
	Cash Transactions	Fixed-exchange Ratio Stock Transactions
CAAR	0.72%	-3.32%
Median CAAR	1.89%	-3.18%
t-statistic	1.01	-3.38
p-value	0.3184	0.0015
N	33	48
PANEL B: Cumulative Changes in Short Interest [-1, 1]		
	Cash Transactions	Fixed-exchange Ratio Stock Transactions
Mean	12.99%	55.43%
Median	0%	17.95%
t-statistic	1.06	3.99
p-value	0.2963	0.0002
N	33	48
PANEL C: Short Interest / Pre-Event Median Short Interest		
Event Day	Cash Transactions	Fixed-exchange Ratio Stock Transactions
-1	1.00	1.03
0	1.02	1.12
1	1.04	1.17
PANEL D: Short Interest / Pre-Event Median Trading Volume		
Event Day	Cash Transactions	Fixed-exchange Ratio Stock Transactions
-1	3.72	3.97
0	3.79	5.02
1	3.88	5.69

- Impact of merger arbitrage: at deal close:

PANEL A: Cumulative Average Abnormal Returns [-1, 1]		
	Cash Transactions	Fixed-exchange Ratio Stock Transactions
CAAR	-0.05%	-1.64%
Median CAAR	-0.57%	-2.20%
t-statistic	-0.85	-1.83
p-value	0.4019	0.0787
N	25	28
PANEL B: Cumulative Changes in Short Interest [-1, 1]		
	Cash Transactions	Fixed-exchange Ratio Stock Transactions
Mean	7.06%	-19.18%
Median	0.01%	-9.26%
t-statistic	0.92	-3.95
p-value	0.3656	0.0005
N	25	28
PANEL C: Short Interest / Pre-Event Median Short Interest		
Event Day	Cash Transactions	Fixed-exchange Ratio Stock Transactions
-1	1.07	1.20
0	1.08	1.11
1	1.10	1.09
PANEL D: Short Interest / Pre-Event Median Trading Volume		
Event Day	Cash Transactions	Fixed-exchange Ratio Stock Transactions
-1	5.69	3.50
0	5.73	2.79
1	5.76	2.78

Concept Recap:



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