

# *Advanced Leveraged Buyouts and LBO Models – Quiz Questions*

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## Types of Debt

1. **Why are multiples tranches of debt required in most leveraged buyouts? For example, if you raise \$5 billion in debt to acquire a company worth \$10 billion, why do you almost always need to split the \$5 billion of debt into multiple tranches?**
  - a. This question premise is false – regardless of the dollar amount of debt required, you don't necessarily need to use multiple tranches.
  - b. Multiple tranches are needed because certain investor classes will only invest up to a certain percentage or certain dollar amount for a given interest rate, principal repayment, and covenants – if you need more capital, you'll need additional and/or different investors.
  - c. You only need multiple tranches if there's a chance the company won't be able to meet its mandatory debt principal repayments each year, in which case a Revolver would be required.
  - d. Companies themselves prefer to use multiple debt tranches because they want to hedge against the risk of rising interest rates by also using high-yield bonds, which typically have fixed interest rates.

2. Which of the following statements are **TRUE** regarding the similarities and differences between a Revolver and Senior Notes?

- a. Senior Notes can be used for short-term, “as-needed” borrowing when banks are unable to offer a Revolving Credit Facility.
- b. In most cases, the Revolver has a longer tenor (maturity) than Senior Notes.
- c. The interest on Revolvers is tied to LIBOR, or another floating interest rate metric, whereas Senior Notes generally have fixed interest rates.
- d. The interest on a Revolver is always paid in cash, but with Senior Notes the interest may be either cash or PIK (Paid-in-Kind).
- e. Early prepayments are allowed for Revolvers, but NOT for Senior Notes.
- f. Neither Senior Notes nor Revolvers offer principal amortization.

3. Which of the following statements are **TRUE** regarding the differences between Term Loans and Subordinated Notes?

- a. Term Loans have fixed interest rates, whereas Subordinated Notes have floating interest rates tied to LIBOR (or equivalent interest rate metric).
- b. Term Loans have floating interest rates tied to LIBOR (or equivalent interest rate metric), whereas Subordinated Notes have fixed interest rates.
- c. Subordinated Notes are below Term Loans in terms of seniority and therefore offer higher interest rates.
- d. Certain Term Loans amortize and allow prepayments, whereas Subordinated Notes NEVER amortize or allow prepayments.

4. Which of the following statements are **TRUE** regarding the similarities and differences between Senior Notes and Subordinated Notes?
- a. Both Senior Notes and Subordinated Notes are preferred by conservative investors such as commercial banks.
  - b. Both Senior Notes and Subordinated Notes are preferred by more aggressive, higher risk-tolerance investors such as hedge funds and merchant banks.
  - c. Senior Notes and Subordinated Notes both offer call protection and incurrence covenants.
  - d. Neither Subordinated Notes nor Senior Notes are ever secured by collateral.
5. Which of the following statements are **TRUE** regarding the similarities and differences between Mezzanine and Term Loans?
- a. Both Mezzanine and Term Loans offer Payment-in-Kind (“PIK”) interest payments rather than cash-only interest payments.
  - b. Mezzanine has a longer tenor (maturity period) than Term Loans (and most other types of debt).
  - c. Certain types of Mezzanine allow for the amortization of principal as well as optional prepayments, similar to Term Loans.
  - d. Mezzanine sometimes offers stock options or warrants to investors, whereas Term Loans offer no equity participation to investors.
6. Which of the following are examples of covenants that you might see for Term Loans, but **NOT** for Subordinated Notes?
- a. Total Debt / EBITDA may not exceed 5.0x.
  - b. The proceeds from any assets sold must be re-invested in the business or used to pay off debt.
  - c. (EBITDA – CapEx) / Interest Expense cannot fall below 2.0x.
  - d. The company cannot raise more than \$2 billion worth of total debt.

## Transaction and Operating Assumptions

7. Suppose that in an LBO model, you initially disable the “Options Rollover” feature – in other words, the options are paid out in cash initially and the option holders do NOT have the option to participate in any additional equity upside between transaction close and when the company is resold in the future. Now you change it so that the options ARE rolled over, so that the option holders participate in the upside when the company is resold. How does the IRR to equity investors (the PE firm) change as a result?
- The IRR should decrease because the PE firm has to pay out additional cash to other investors at the end.
  - The IRR should increase because the PE firm doesn’t have to pay as much in upfront cash to the existing investors.
  - To determine the IRR impact, you would need to know both the implied per share purchase price initially and when the company is resold, as well as the exercise prices for all the option tranches and the # of options in each tranche.
  - To determine the IRR impact, you just need to know the initial implied per share purchase price and the implied per share price when the company is resold.
8. In the Transaction Assumptions of an LBO model, you usually build in the option to refinance the company’s existing debt. Would refinancing existing debt make the IRR to equity investors (the PE firm) increase or decrease, all else being equal?
- Refinancing existing debt would almost always make the IRR decrease because it means that the PE firm must contribute more equity (cash) upfront.
  - It mostly depends on the interest rates and principal repayment terms of the existing debt compared to the new debt.
  - It would almost always increase the IRR because a PE firm would not choose to refinance debt unless it benefited the firm in some way.
  - It’s impossible to determine without knowing what percentage of the Sources of Funds are spent on refinancing debt.

9. Under the Operating Assumptions in an LBO model, we specify a Minimum Cash Balance to prevent the company's cash balance from dropping below the minimum level required to continue operating and paying its ordinary ongoing expenses, such as employee compensation and rent. Its cash balance is MOST LIKELY to decrease to this minimum level due to the high interest expense on the debt.
- a. True.
  - b. False.
10. In the Operating Assumptions section of an LBO model, you've enabled Circular References to determine the annual interest expense. Now you disable Circular References. Does the IRR to equity investors (the PE firm) increase, decrease, or stay the same?
- a. The IRR will decrease because now the company has to pay a higher interest expense each year – since the interest is based on the beginning debt balance rather than the average debt balance over the course of the year.
  - b. The IRR will stay the same because the beginning balance vs. average balance distinction makes a negligible difference, at best, in the model.
  - c. The IRR could either decrease or stay the same, depending on the types of debt used in the transaction.
  - d. The IRR will decrease because paying interest on the beginning debt balance will result in a higher interest expense over time if there is PIK interest involved.

## Source & Uses

Figure 1.0 – Transaction Assumptions

Transaction Assumptions (\$ in Millions Except Per Share Data)		Operating Assumptions (\$ in Millions Except Per Share Data)	
Current Target Stock Price:	\$ 35.70	Minimum Cash Balance:	\$ 200
Offer Premium:	25.0%	Sponsor Annual Management Fee:	5
<b>Offer Price Per Target Share:</b>	<b>\$ 44.63</b>	COGS Savings:	20
Fully Diluted Shares Outstanding:	500.0	Operating Expense Savings:	45
<b>Equity Purchase Price:</b>	<b>\$ 22,313</b>	3-Month LIBOR:	0.40%
Plus: Total Debt	2,125	Circular References Allowed (0 = No, 1 = Yes):	Yes
Plus: Preferred Stock	1,055	ACME Co. TTM EBITDA	\$ 3,235
Plus: Noncontrolling (Minority) Interests	750		
Less: Cash & Cash-Equivalents	(1,250)		
Less: Equity Investments	(985)		
<b>Total Enterprise Value:</b>	<b>\$ 24,008</b>		
Refinance Debt? (0 = No, 1 = Yes)	No		
Roll Over Options? (0 = Liquidate, 1 = Roll Over)	Yes		
Revolver Commitment from Bank:	\$ 600		
Dividend Recap? (0 = No, 1 = Yes)	No		
Term Loan A Recap Amount:	\$ 750		
Exit Year:	Year 5		
EBITDA Exit Multiple:	7.0 x		

Figure 1.1 – Capital Structure Assumptions

Capital Structure Assumptions - Scenarios										
(\$ in Millions Except Per Share Data)										
<b>Select Financing Scenario:</b>	1									Leverage Ratio (Excluding Revolver): 3.0 x
<b>Transaction Type:</b> (1 = Stock, 0 = Asset)	Stock									Non-Revolver Debt + Preferred Stock: \$ 9,705
	<b>Selected Scenario</b>	<b>EBITDA Multiple</b>	<b>Percent of Total</b>	<b>Financing Scenarios</b>						
	1			1	2	3	4	5		
<b>Sources of Funds:</b>										
Excess Cash:	\$ 1,050	0.32 x	4.1%	\$ 1,050	\$ 1,050	\$ 1,050	\$ 1,050	\$ 1,050	\$ 1,050	
Debt Assumed:	2,125	0.66 x	8.3%	2,125	2,125	2,125	2,125	2,125	2,125	
Noncontrolling Interests Assumed:	750	0.23 x	2.9%	750	750	750	750	750	750	
Drawn Revolver:				-	-	-	-	-	-	
Term Loan A:				25%	0%	30%	50%	17%		
Term Loan B:				15%	0%	25%	50%	17%		
Senior Note:				20%	33%	30%	0%	17%		
Subordinated Note:				15%	33%	15%	0%	17%		
Mezzanine:				15%	33%	0%	0%	17%		
Preferred Stock:				10%	0%	0%	0%	17%		
Sponsor Common Equity:										
Management Rollover:	100	0.03 x	0.4%	100	0	0	100	100		
<b>Total Sources:</b>	<b>\$ 25,472</b>	<b>7.87 x</b>	<b>100.0%</b>	<b>\$ 25,472</b>	<b>\$ 25,514</b>	<b>\$ 25,462</b>	<b>\$ 25,433</b>	<b>\$ 25,473</b>		
<b>Uses of Funds:</b>										
Purchase Common Equity:	\$ 22,313	6.90 x	87.6%	\$ 22,313	\$ 22,313	\$ 22,313	\$ 22,313	\$ 22,313	\$ 22,313	
Debt Assumed:	2,125	0.66 x	8.3%	2,125	2,125	2,125	2,125	2,125	2,125	
Refinanced Debt:	-	0.00 x	0.0%	-	-	-	-	-	-	
Assume Noncontrolling Interests:	750	0.23 x	2.9%	750	750	750	750	750	750	
Purchase Noncontrolling Interests:	-	0.00 x	0.0%	-	-	-	-	-	-	
Transaction Fees:	62	0.02 x	0.2%	62	42	42	42	75		
Capitalized Financing Fees:										
<b>Total Uses:</b>	<b>\$ 25,472</b>	<b>7.87 x</b>	<b>100.0%</b>	<b>\$ 25,472</b>	<b>\$ 25,514</b>	<b>\$ 25,462</b>	<b>\$ 25,433</b>	<b>\$ 25,473</b>		

Figure 1.2 – Sources & Uses Schedule

Sources & Uses of Funds							
(\$ in Millions Except Per Share Data)							
	Dollar Amount	EBITDA Multiple	Percent of Total	Interest Rate	Spread	Years PIK	
<b>Sources of Funds:</b>							
Excess Cash:	\$ 1,050	0.32 x	4.1%	0.50%	N/A	N/A	
Debt Assumed:	2,125	0.66 x	8.3%	0.00%	N/A	0	
Noncontrolling Interests Assumed:	750	0.23 x	2.9%	N/A	N/A	N/A	
Drawn Revolver:	-	0.00 x	0.0%	2.90%	L + 250	0	
Term Loan A:	2,426	0.75 x	9.5%	3.90%	L + 350	0	
Term Loan B:	1,456	0.45 x	5.7%	5.40%	L + 500	0	
Senior Note:	1,941	0.60 x	7.6%	6.40%	L + 600	0	
Subordinated Note:	1,456	0.45 x	5.7%	10.00%	N/A	0	
Mezzanine:	1,456	0.45 x	5.7%	12.00%	N/A	2	
Preferred Stock:	971	0.30 x	3.8%	14.00%	N/A	3	
Sponsor Common Equity:	11,742	3.63 x	46.1%	N/A	N/A	N/A	
Management Rollover:	100	0.03 x	0.4%	N/A	N/A	N/A	
<b>Total Sources:</b>	<b>\$ 25,472</b>	<b>7.87 x</b>	<b>100.0%</b>				
<b>Uses of Funds:</b>							
Purchase Common Equity:	\$ 22,313	6.90 x	87.6%				
Debt Assumed:	2,125	0.66 x	8.3%				
Refinanced Debt:	-	0.00 x	0.0%				
Assume Noncontrolling Interests:	750	0.23 x	2.9%				
Purchase Noncontrolling Interests:	-	0.00 x	0.0%				
Transaction Fees:	62	0.02 x	0.2%				
Capitalized Financing Fees:	223	0.07 x	0.9%				
<b>Total Uses:</b>	<b>\$ 25,472</b>	<b>7.87 x</b>	<b>100.0%</b>				

Figure 1.3 – Transaction Fees & Expense Assumptions

Transaction Fees & Expense Assumptions						
(\$ in Millions Except Per Share Data)						
	LIBOR +	Fixed Interest	Fee %:	Appropriate Amount	Fees (\$)	
<b>Transaction Fees:</b>						
Sell-Side Bank M&A Advisory Fee:			0.10%			
<b>Financing Fees:</b>						
Revolver:	2.50%		1.50%			
Term Loan A:	3.50%		2.00%			
Term Loan B:	5.00%		2.00%			
Senior Note:	6.00%		2.50%			
Subordinated Note:		10.00%	3.00%			
Mezzanine:		12.00%	3.00%			
Preferred Stock:		14.00%	2.00%			
<b>Miscellaneous, Legal &amp; Accounting Fees:</b>						20

[THE FOLLOWING QUESTIONS RELATE TO FIGURES 1.0 THROUGH 1.3 ABOVE. CELLS HIGHLIGHTED IN BLACK REPRESENT FIGURES THAT NEED TO BE CALCULATED IN THE QUESTIONS BELOW]

11. In Figure 1.1 above, in the Capital Structure Assumptions schedule under the Sources of Funds Selected Scenario 1 column, what is the dollar value of Sponsor Common Equity?
- a. Sponsor Common Equity = \$11,742.
  - b. Sponsor Common Equity = \$11,142.
  - c. Sponsor Common Equity = \$10,692.
  - d. Sponsor Common Equity = \$11,642.
  - e. Sponsor Common Equity = \$13,567.
12. Suppose that we were modeling a scenario in which the private equity firm acquired only 80% of the company and allowed management to own the remaining 20% (management currently owns 100% of the company). How would the assumptions shown in the schedules above change if this were the case?
- a. There would be no changes – you still assume that there’s a new owner for the company and continue with this treatment afterward even in the Purchase Price Allocation schedule.
  - b. You would have to assume that an additional Noncontrolling Interest (Minority Interest) is created since this is an acquisition for over 50%, but less than 100%, of the company.
  - c. You would simply increase the Management Rollover number to reflect the value of 20% of the company, which reduces the Sponsor Common Equity Required.
  - d. It’s impossible to determine without additional information on how the transaction is structured.
13. In Figure 1.1 above in the Capital Structure Assumptions – Scenarios schedule, under the “Uses of Funds” – Selected Scenario 1 column, what is the dollar value of the Capitalized Financing Fees line item?
- a. Capitalized Financing Fees = \$245.
  - b. Capitalized Financing Fees = \$265.
  - c. Capitalized Financing Fees = \$242.
  - d. Capitalized Financing Fees = \$214.
  - e. Capitalized Financing Fees = \$223.

14. **Why do we bother to show items like Debt Assumed and Noncontrolling (Minority) Interests Assumed in both the Sources of Funds and Uses of Funds if they have no net cash impact on the deal or the financing required?**
- Simply to clarify the exact treatment of these items and to make it perfectly clear what is happening in the model.
  - This is an error in the model and it is not truly necessary to do this – we should only pay attention to items that make a net impact on the numbers in some way.
  - We only need to include these because both existing debt and Noncontrolling Interests are present on this company's Balance Sheet– if they were not, we could leave them off the schedule completely.
  - We need them because they always reduce the funds required to do the deal.

## Pro-Forma Balance Sheet Adjustments

15. **Which of the following statements are TRUE regarding the DIFFERENCES in the pro-forma Balance Sheet adjustments in an LBO model vs. the adjustments in a merger model?**
- Under Long-Term Liabilities, there are likely to be more debt tranches in an LBO model than there are in a merger model.
  - The formula for calculating newly created Goodwill is different in an LBO model, because with an LBO a shell corporation created by the PE firm purchases the company.
  - In a merger model, the target company's existing Shareholder's Equity balance is reset to \$0, whereas in an LBO model the company's existing Shareholders' Equity is added to the "Common Equity Contribution from Financial Sponsor" line item.
  - In a merger model, you're likely to modify the Cash & Cash-Equivalents number on the Balance Sheet, but in an LBO model this is uncommon since cash does not change in the transaction.
  - In a merger model, you may adjust for items like inter-company Accounts Receivable and inter-company Accounts Payable to eliminate redundant entries, but in an LBO model you would not make these adjustments since the company is not being acquired by another "real" company.

16. Which of the following statements are **TRUE** regarding the adjustments that need to be made to the Pro-Forma Balance Sheet in an LBO transaction?
- a. Since debt will be issued to finance the LBO, a new Long-Term Asset called Capitalized Financing Fees will be created to reflect that you've paid fees upfront in cash to raise the debt, but that you will recognize those fees on the Income Statement over many years.
  - b. The Pro-Forma Goodwill balance as of transaction close will be the sum of newly created Goodwill (from the Purchase Price Allocation schedule) and the existing Goodwill balance.
  - c. All newly created debt balances under Long-Term Liabilities should decrease year-over-year due to the required annual repayments.
  - d. The existing Shareholder's Equity is reset to \$0, and new line items are created for Sponsor Common Equity, Preferred Stock (possibly), and the Management Rollover (possibly).
17. You're reviewing the Pro-Forma Balance Sheet Adjustments section of an LBO model, and you see that the company initially had a Retained Earnings balance of \$1,000 prior to the transaction close. At transaction close, the balance is (\$10) – negative \$10 – rather than \$0. What's the error here?
- a. There is no error – this simply reflects the fact that there was a small dividend recapitalization (dividend recap) that was part of the initial transaction, since dividend recaps always push down Retained Earnings.
  - b. This means that you incorrectly linked something in the Purchase Price Allocation schedule, since all existing line items within Shareholders' Equity should always be \$0 immediately upon transaction close.
  - c. There is no error – this just reflects the fact that you always expense Transaction Fees (Advisory, legal & Miscellaneous Fees) and deduct them from Retained Earnings immediately, whereas you capitalize Financing Fees.
  - d. It depends on whether the Balance Sheet is still balanced – if the Balance Sheet remains in balance, then this is not an error because a balanced Balance Sheet is always correct.

## Debt Schedules

Figure 2.0 – Debt Schedule – Assumptions

Debt Schedules											
(\$ in Millions Except Per Share Data)							Projected				
						Prior Yr	Year 1	Year 2	Year 3	Year 4	Year 5
LIBOR Curve:							0.40%	0.50%	1.00%	1.50%	2.00%
<b>Interest Rate Assumptions:</b>											
			<b>LIBOR +</b>	<b>Fixed</b>							
				<b>Interest</b>							
Revolver:			2.50%			2.90%	3.00%	3.50%	4.00%	4.50%	
Term Loan A:			3.50%			3.90%	4.00%	4.50%	5.00%	5.50%	
Term Loan B:			5.00%			5.40%	5.50%	6.00%	6.50%	7.00%	
Senior Note:			6.00%			6.40%	6.50%	7.00%	7.50%	8.00%	
Subordinated Note:				10.00%		10.00%	10.00%	10.00%	10.00%	10.00%	
Mezzanine:				12.00%		12.00%	12.00%	12.00%	12.00%	12.00%	
Preferred Stock:				14.00%		14.00%	14.00%	14.00%	14.00%	14.00%	
Undrawn Revolver Commitment Fee (Commitment = \$100M):						0.50%	\$ 0.5	\$ 0.5	\$ 0.5	\$ 0.5	\$ 0.5
<b>Interest Expense Calculations:</b>											
Revolver:											
Term Loan A:							97.5	36.1	0.0	0.0	0.0
Term Loan B:											
Senior Note:							96.0	97.5	105.0	112.5	120.0
Subordinated Note:							130.0	143.0	157.3	173.0	173.0
Mezzanine:											
<b>Total Interest Expense:</b>							<b>\$ 576.0</b>	<b>\$ 537.3</b>	<b>\$ 526.0</b>	<b>\$ 540.3</b>	<b>\$ 520.1</b>
Preferred Stock Dividends:							\$ 70.0	\$ 79.8	\$ 91.0	\$ 103.7	\$ 103.7

Figure 2.1 – Debt Schedule – Mandatory and Optional Debt Repayments

Debt Schedules						Projected						
(\$ in Millions Except Per Share Data)						Prior Yr	Year 1	Year 2	Year 3	Year 4	Year 5	
		Yearly										
		Beginning	Amort.	Prepay	Maturity	PIK						
		Balance	%:	Allowed?	(Yrs)	Years						
<b>Debt Amortization:</b>												
Term Loan A:		\$ 2,500	15.0%	Yes	5 years	0		15.0%	15.0%	15.0%	15.0%	40.0%
Term Loan B:		2,000	10.0%	Yes	5 years	0		10.0%	10.0%	10.0%	10.0%	60.0%
Senior Note:		1,500	0.0%	No	8 years	0		0.0%	0.0%	0.0%	0.0%	0.0%
Subordinated Note:		1,300	0.0%	No	7 years	3		0.0%	0.0%	0.0%	0.0%	0.0%
Mezzanine:		1,200	0.0%	No	7 years	5		0.0%	0.0%	0.0%	0.0%	0.0%
Preferred Stock:		500				3						
<b>Sources of Funds:</b>												
Beginning Cash Balance:							\$ 400	\$ 200	\$ 200	\$ 200	\$ 896	
Less: Minimum Cash Balance:							(200)	(200)	(200)	(200)	(200)	
Plus: Cash Flow Available for Debt Repayment:							1,599	1,324	577	1,495	1,754	
<b>Subtotal Before Revolver:</b>							<b>1,799</b>	<b>1,324</b>	<b>577</b>	<b>1,495</b>	<b>2,449</b>	
Revolver Borrowing Required:							-	-	-	-	-	
<b>Total Sources of Funds:</b>							<b>\$ 1,799</b>	<b>\$ 1,324</b>	<b>\$ 577</b>	<b>\$ 1,495</b>	<b>\$ 2,449</b>	
<b>Uses of Funds:</b>												
<i>Mandatory Debt Repayment:</i>												
Term Loan A:												
Term Loan B:												
Senior Note:							-	-	-	-	-	
Subordinated Note:							-	-	-	-	-	
Mezzanine:							-	-	-	-	-	
<b>Mandatory Repayment Total:</b>							<b>\$ 575</b>	<b>\$ 575</b>	<b>\$ 200</b>	<b>\$ 200</b>	<b>\$ -</b>	
<i>Optional Debt Repayment:</i>												
Revolver:							\$ -	\$ -	\$ -	\$ -	\$ -	
Term Loan A:												
Term Loan B:												
Senior Note:							-	-	-	-	-	
Subordinated Note:							-	-	-	-	-	
Mezzanine:							-	-	-	-	-	
<b>Optional Repayment Total:</b>							<b>\$ 1,224</b>	<b>\$ 749</b>	<b>\$ 377</b>	<b>\$ 599</b>	<b>\$ -</b>	
<b>Excess Cash Generated on Balance Sheet:</b>							-	-	-	696	2,449	
<b>Total Uses of Funds:</b>							<b>\$ 1,799</b>	<b>\$ 1,324</b>	<b>\$ 577</b>	<b>\$ 1,495</b>	<b>\$ 2,449</b>	

Figure 2.2 –Balance Sheet

Balance Sheet										
(\$ in Millions Except Per Share Data)	Historical		Transaction Adjustments			Projected				
	Pr Year 2	Pr Year 1	Debit	Credit	Pr Year 1	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Assets</b>										
<b>Current Assets:</b>										
Cash and Cash Equivalents:	\$ 1,570	\$ 1,514	\$ -	\$ 1,114	\$ 400	\$ 200	\$ 200	\$ 200	\$ 896	\$ 2,649
<b>Other Current Assets</b>										
<b>Total Current Assets:</b>										
Capitalized Financing Fees:										
Net PP&E:										
Goodwill:										
<b>Total Assets:</b>										
<b>Liabilities &amp; Shareholders' Equity</b>										
<b>Current Liabilities:</b>										
Accounts Payable:										
Accrued Expenses & Other Current Liabilities:										
<b>Total Current Liabilities:</b>										
Existing Long-Term Debt:	-	-	-	-	-	-	-	-	-	-
Noncontrolling Interests (Minority Interests):										
Revolver:			-	-	-	-	-	-	-	-
Term Loan A:			-	2,500	2,500					
Term Loan B:			-	2,000	2,000					
Senior Note:			-	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Subordinated Note:			-	1,300	1,300					
Mezzanine:			-	1,200	1,200	1,344	1,505	1,686	1,888	2,115
<b>Shareholders' Equity:</b>										
Common Stock & APIC:										
Accumulated Other Comprehensive Income:										
Preferred Stock:			-	500	500					
Sponsor Common Equity:			-	24,801	24,801	24,801	24,801	24,801	24,801	24,801
Management Rollover:			-	100	100	100	100	100	100	100
<b>Total Shareholders' Equity:</b>										
<b>Total Liabilities &amp; Shareholders' Equity:</b>										

[PLEASE REFER TO FIGURES 2.0 THROUGH 2.2 FOR THE 5 QUESTIONS BELOW.]

[ITEMS HIGHLIGHTED IN BLACK REPRESENT MISSING VALUES THAT YOU MUST CALCULATE.]

18. In Figure 2.0 – Debt Schedule – Assumptions above, in the Interest Expense Calculations section what is the annual interest expense for Term Loan B in Year 2? For purposes of this question, assume that the interest expense is based ONLY on the beginning balance, NOT the average of the beginning and ending balances.
- Interest Expense Year 2 = \$108.0.
  - Interest Expense Year 2 = \$99.0.
  - Interest Expense Year 2 = \$31.7.
  - Interest Expense Year 2 = \$36.1.
19. In Figure 2.1 above, what are the Mandatory Debt Repayment figures for Term Loan A and Term Loan B in Year 2?
- Mandatory Term Loan A Year 2 Debt Repayment = \$200; Mandatory Term Loan B Year 2 Debt Repayment = \$375.
  - Mandatory Term Loan A Year 2 Debt Repayment = \$210; Mandatory Term Loan B Year 2 Debt Repayment = \$385.
  - Mandatory Term Loan A Year 2 Debt Repayment = \$375; Mandatory Term Loan B Year 2 Debt Repayment = \$200.
  - Mandatory Term Loan A Year 2 Debt Repayment = \$0; Mandatory Term Loan B Year 2 Debt Repayment = \$200.
20. The basic formula for the Optional Debt Repayment for each tranche of debt in the schedule above is as follows: Optional Debt Repayment =  $\text{MAX}(\text{MIN}(\text{Prior Year Balance for This Debt Tranche} - \text{Mandatory Repayment This Year}, \text{Subtotal Before Revolver} - \text{All Optional and Mandatory Debt Repaid So Far}), 0)$ . The part inside the formula makes intuitive sense, but why do we need the  $\text{MAX}(\text{Formula}, 0)$  around it?
- Because the (Subtotal Before Revolver – All Debt Repaid So Far) might be negative.
  - Because the (Prior Year Balance for This Debt Tranche – Mandatory Repayment This Year) part might be negative.
  - We should always include  $\text{MAX}(\text{Formula}, 0)$  around repayment formulas to error-check the model.
  - This part is actually optional – we don't need to include it in this model.

21. In the schedules shown above, there is no Revolver Borrowing Required in any of the projected years because the company's cash flows are relatively high and it can easily meet the mandatory debt repayments. If there WERE Revolver Borrowing Required in any of the years, which of the following conditions MUST also be TRUE?
- "Mandatory Debt Repayment Total" must exceed "Cash Flow Available for Debt Repayment."
  - There could never be any optional debt repayments if you draw on the Revolver in a given year.
  - There may be optional debt repayments in that year, but they would be limited to the differential between the Total Sources of Funds and the Mandatory Repayment Total.
  - "Mandatory Debt Repayment Total" must exceed "Subtotal Before Revolver."
22. Which of the following conditions would MOST likely result in the Revolver being drawn on in a projected year in the model? Assume that we are still using the schedules shown in Figures 2.0 – 2.2 above. Select the TWO most likely conditions that would cause this to happen.
- If the company's cash flows in Year 1 were significantly lower, e.g. less than \$500 million rather than \$1.6 billion.
  - If the Senior Note also had mandatory repayment requirements attached to it over the 8 years it is outstanding.
  - If the annual amortization percentages for both Term Loan A and Term Loan B were significantly higher – in the 20-30% range, for example, rather than the 10-15% range.
  - If there were a Payment-in-Kind (PIK) option attached to every single tranche of debt – because the higher balances each year would result in higher repayment requirements as well.
  - If the company had a higher Minimum Cash Balance or a lower initial Cash Balance in Year 1.
23. In Figure 2.0 – Debt Schedule – Assumptions above, the Interest Expense for the Revolver is hidden. What should the Interest Expense for the Revolver be in each year?
- It will be \$0 in every year because the company never draws on its Revolver and therefore never pays interest on it.
  - It will be \$0.5 in the first year, but will increase each year after that because the company's Undrawn Revolver Commitment Fees keep increasing each year.
  - It will be \$0.5 in every year to reflect the 0.5% undrawn commitment fee times the \$100 million revolving credit line.
  - It will be \$3.0 in the first year to reflect the 0.5% undrawn commitment fee, plus the 2.50% interest rate times the \$100 million credit line, and it will increase each year after that as LIBOR goes up.

24. In **YEAR 4** of the debt schedules above, which of the items listed under “Interest Expense Calculations” should **NOT** impact the company’s Pre-Tax Income on the Income Statement?

- a. Only the Preferred Stock Dividends should be excluded – everything else counts as interest expense, regardless of whether it’s cash, PIK, or an undrawn commitment fee, and therefore everything else impacts Pre-Tax Income.
- b. The Revolver Interest should be excluded since it just consists of the undrawn commitment fee; any non-cash interest on the Subordinated Note, Mezzanine, and Preferred Stock should also be excluded because you only reflect the true cash interest expense on the Income Statement.
- c. Only Mezzanine interest should be excluded in Year 4 because by this point, interest on the Subordinated Note and Preferred Stock is paid in cash – so only interest on Mezzanine is non-cash.
- d. Both Preferred Stock Dividends and Mezzanine interest should be excluded because dividends are never tax-deductible, and because the Mezzanine interest is still PIK and therefore non-cash in Year 4.

25. In **Figure 2.2** above, what is the balance of Preferred Stock in projection Year 1 through Year 3?

- a. Year 1 Balance = \$500; Year 2 Balance = \$500; Year 3 Balance = \$500.
- b. Year 1 Balance = \$570; Year 2 Balance = \$650; Year 3 Balance = \$741.
- c. Year 1 Balance = \$570; Year 2 Balance = \$650; Year 3 Balance = \$650.
- d. Year 1 Balance = \$500; Year 2 Balance = \$570; Year 3 Balance = \$650.

## Linking and Modifying the Statements

26. Which of the following statements are **FALSE** regarding the Pro-Forma Balance Sheet adjustments required in a Dividend Recap that follows a Leveraged Buyout transaction?

- a. Long-Term Liabilities (Debt) will increase and Shareholder’s Equity (Retained Earnings) will decrease.
- b. There will be NO changes to the Assets side of the Balance Sheet because a Dividend Recap only impacts Debt and Shareholders’ Equity.
- c. Capitalized Financing Fees will be created on the Assets side since all fees on debt issuances are paid upfront in cash and then amortized over time.
- d. Retained Earnings will decrease by the EXACT same amount that the Debt increases by, so the Balance Sheet remains in balance.
- e. As a result of the Dividend Recap, the company’s Operating Income and Pre-Tax Income will both decrease to reflect the additional expense.

27. Which of the following statements are **TRUE** regarding the modifications to the Income Statement and Cash Flow Statement in an LBO transaction?
- a. The new Operating Income post-transaction is typically lower than the pre-transaction numbers due to the new D&A created from asset write-ups in the transaction.
  - b. The new net interest expense must ALWAYS be higher than the old net interest expense prior to the transaction because the total amount of debt always increases in a leveraged buyout.
  - c. You add back any new non-cash expenses on the Income Statement – such as PIK interest and new D&A from asset write-ups – on the Cash Flow Statement.
  - d. You ALWAYS include some type of cost savings assumption (for COGS or OpEx or both) because the PE firm will always find ways to reduce the company's workforce and associated expenses.

## Credit Statistics and Leverage and Coverage Ratios

28. All of the following financial ratios typically appear under the Credit Statistics section in an LBO model **EXCEPT**:
- a. Leverage Ratios.
  - b. Interest Coverage Ratios.
  - c. Financial Profitability Ratios.
  - d. Liquidity Ratios.
29. All of the following are examples of Interest Coverage Ratios **EXCEPT**:
- a. EBITDA / Senior Interest.
  - b.  $(\text{EBITDA} - \text{CapEx}) / \text{Total Interest}$ .
  - c.  $(\text{EBITDA} - \text{CapEx}) / \text{Net Debt}$ .
  - d.  $(\text{EBITDA} - \text{CapEx} - \text{Change in WC}) / \text{Cash Interest}$ .

30. A company you're analyzing in a potential LBO transaction has a Total Debt / EBITDA ratio ranging from 2.0x to 3.0x over 5 years; its EBITDA / Total Interest Expense ratio ranges from 1.5x to 2.0x, and its EBITDA / Cash Interest Expense ratio ranges from 2.5x to 3.5x. It has minimal CapEx and working capital requirements. What might you conclude from these numbers?
- The company's Leverage Ratio is in a very reasonable range, but its Interest Coverage Ratio is concerning since you generally want to see numbers above 2.0x there; if you're close to 1.0x, the company might run into trouble paying for its interest if there's a downturn in its business.
  - The company's Leverage Ratio is fine, and although its Interest Coverage Ratio seems rather low initially, on a cash interest-basis it is in a healthy range; we would be more concerned there if the Leverage Ratio were significantly higher.
  - The company's Leverage Ratio is too high and its Interest Coverage Ratio is too low, so we would recommend less debt for this deal.
  - It's impossible to draw a meaningful conclusion without also knowing the Senior Debt / EBITDA, Net Debt / EBITDA, and equivalent ratios for the interest coverage.
31. You're analyzing another potential leveraged buyout transaction, and the proposed capital structure for the deal uses 2 traditional Term Loans with floating interest rates tied to LIBOR and 1 tranche of Subordinated Notes with a fixed interest rate. There is no PIK option on any of these, so all interest is paid in cash. The Total Debt / EBITDA ratio ranges from 2.5x to 3.5x, the Total Debt / (EBITDA – CapEx) ratio ranges from 4.0x to 6.0x, the EBITDA / Interest ratio ranges from 3.0x to 4.0x, and the (EBITDA – CapEx) / Interest ratio ranges from 1.5x to 2.5x. Additionally, the company's Net Debt / EBITDA ratio ranges from 1.5x to 2.5x. What would you conclude based on these numbers?
- The company's Leverage Ratios are too high and its Interest Coverage Ratios are too low if you use the (EBITDA – CapEx) metric to more accurately measure cash flow requirements; as a result, we should reduce the total amount of debt used in this deal.
  - We might be able to improve some of these ratios and reduce the company's default risk if we shifted some of the debt interest to PIK instead, so that the cash interest expense decreases.
  - Rather than reducing the amount of debt, we should instruct the management team to spend less on CapEx going forward to make the ratios more favorable and reduce the company's credit risk.
  - While the company's Leverage Ratios and Interest Coverage Ratios appear acceptable on an EBITDA-basis, this company is spending a huge amount on CapEx and that increases its risk to lenders; however, it also has a large cash balance which it could use to repay debt quickly, reducing risk.



Figure 3.1 – IRR Calculations for Debt Investors

Returns Analysis - Debt Investors								
(\$ in Millions Except Per Share Data)								
					Projected			
			Prior Yr	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Returns to Debt Investors:</b>								
<i>Preferred Stock:</i>								
Initial Investment:			\$ (500)					
Cash Dividends:				-	-	-	104	104
Remaining Principal Paid Off:								741
Equity Value at Exit:								956
<b>Total Cash Flows:</b>			<b>\$ (500)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 104</b>	<b>\$ 1,800</b>
<b>IRR:</b>								<b>31.1%</b>
<i>Subordinated Note:</i>								
Initial Investment:			\$ (1,300)					
Cash Interest Payments:				-	-	-	173	173
Paydown of Principal:				-	-	-	-	-
Remaining Principal Paid Off:								1,730
<b>Total Cash Flows:</b>			<b>\$ (1,300)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 173</b>	<b>\$ 1,903</b>
<b>IRR:</b>								<b>10.0%</b>
<i>Mezzanine:</i>								
Initial Investment:			\$ (1,200)					
Cash Interest Payments:				-	-	-	-	-
Paydown of Principal:				-	-	-	-	-
Remaining Principal Paid Off:								2,115
<b>Total Cash Flows:</b>			<b>\$ (1,200)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 2,115</b>
<b>IRR:</b>								<b>12.0%</b>

[THE QUESTIONS BELOW ALL RELATE TO THE CALCULATIONS IN FIGURES 3.0 AND 3.1 ABOVE.]

32. In **Figure 3.0**, we see an IRR of approximately 14% to the private equity sponsor. This deal was done at a 3.0x Leverage Ratio and the company was acquired for a 25% premium, with an implied EBITDA purchase multiple of 7.4x. While a 14% IRR is not bad, typically private equity firms aim for higher returns than this. Based on these numbers and the calculations shown above, what do you think is the most **REALISTIC** way to boost the IRR to the sponsor in this model?
- Reduce the purchase premium so that the PE firm pays a lower purchase EBITDA multiple and therefore earns a higher return since it invests less equity in the beginning.
  - Increase the exit EBITDA multiple – for a company of this size growing at this rate, it’s reasonable to assume a moderate level of multiple expansion by Year 5.
  - Do a dividend recap in Year 3 or Year 4 – all else being equal, more leverage should always boost the IRR if the IRR is positive to begin with.
  - Use more leverage initially, since a 3.0x Leverage Ratio is not very aggressive and the company can most likely support more debt.
33. In **Figure 3.0** above, we see that the IRR to both the Sponsor (PE firm) and the Management Rollover is 13.8%. Is it possible to have a scenario where the IRR is **NOT** the same for these two investor classes?
- Yes – the IRR is the same here only because there are no dividends. If there were dividends, they would be allocated differently between these investor classes and the resulting IRRs would differ.
  - No – the IRRs would always be the same because it’s the exact same investment, just different percentage ownerships of it.
  - Yes – if it’s a scenario where the PE firm provides some type of management incentive and allocates to management an extra percentage of the IRR above a set “hurdle rate” this could happen.
  - Yes – in fact, it’s purely a coincidence here that the numbers are the same and ordinarily they would be different anyway.

34. **Would the IRR to the sponsor increase, decrease, or stay the same if we modeled this as a 3-year LBO rather than a 5-year LBO?**
- It depends on the numbers; in this case the 3-year IRR is higher, but depending on how much debt is repaid and the assumed exit multiple in each year, either one could be higher.
  - The 3-year IRR will always be higher because it's easier to earn a high return in a shorter period of time than it is over a longer period of time.
  - The 5-year IRR will tend to be higher because the company has more time to pay off debt, which means that the "Net Debt" number at the end is lower and the "Equity Value Available to Shareholders on Exit" is higher as a result.
  - It depends on the type of debt and the interest on the debt; with debt that has PIK interest attached, the 5-year IRR will be higher, but with debt that has mostly cash interest, the 3-year IRR will be higher.
35. **In Figure 3.1, when we calculate the IRR on the Preferred Stock, the 31.1% figure is more than double the 14% dividend yield on Preferred Stock. That's primarily because the Preferred Stock investors here get equity participation as well and own 3.9% of the company after the transaction closes. Will equity participation for other debt investors ALWAYS boost the IRR as it does for the Preferred Stock investors here?**
- Yes, because additional equity at the end always means that the IRR on the Preferred Stock will exceed the dividend yield on it – even if the IRR to true equity investors is negative or very low.
  - No – if it's a situation where the IRR for the equity investors turns negative, the IRR for the Preferred Stock investors will be less than the dividend yield on the Preferred Stock.
  - No – if the IRR for the equity investors is below the dividend yield on the Preferred Stock, then the IRR on the Preferred Stock will also fall below that level.
  - It's impossible to say because it depends on whether the dividends are paid out in cash or accrue to the Preferred Stock principal (PIK dividends).

**36. Suppose that we change the interest on the Subordinated Notes to PIK interest for all 5 years. Would this increase, decrease, or have no impact on the IRR to the Subordinated Note investors?**

- a. It would increase the IRR to those investors because it increases the total amount of principal that must be repaid to them at the end of the period.
- b. It depends on whether or not circular references are enabled – if they are, we use the average debt balance for calculating interest, which will push up the IRR since the interest expense dollar amount also increases under that scenario.
- c. It would decrease their IRR because it deprives them of cash interest payments in the years in between initial investment and principal repayment.
- d. It would have no impact on the IRR – even in the schedule above, we can see that the IRR on the Subordinated Notes is just 10%, the same as its interest rate, even with the PIK option enabled for several years.