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Financial Modeling Fundamentals, Module 14: Capital Markets and Debt vs. Equity

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Overview & Key Rules of Thumb

You could easily get *general* questions about Equity and Debt in interviews, and you need to know about them to understand valuation, M&A, and leveraged buyouts.

However, this guide covers **specialized questions** – ones that are *unlikely* to come up in interviews with the M&A group or industry groups.

You might get these questions if you're interviewing with the **ECM** (Equity Capital Markets), **DCM** (Debt Capital Markets), or **LevFin** (Leveraged Finance) teams.

Key Rule #1: What the Capital Markets and Leveraged Finance Teams Do

All these teams help companies **raise capital**.

For example, a company might come to your bank and say, "We want to raise $100 million. Please find investors, set the terms, and arrange the deal, and we'll pay you a fee for your services."

You would then advise the company on its best options for raising capital, the most appropriate terms, and the best investors to target, and you would run the whole process.

Capital markets groups add value by:

1) **Advising** the company on the best type of capital to raise – Equity, Debt, Convertible Bonds, or other variations.

2) **Connecting** the company with potential investors that might be interested. The bank's sales team maintains relationships with investors, and they leverage those relationships to sell new issuances.

3) **Arranging** the entire deal, from marketing the company to investors to negotiating the deal terms.

4) **Assuming Balance Sheet risk** when the bank lends the company money directly (i.e., "Bank Debt") instead of selling the issuance to investors (e.g., high-yield bonds).

We cover the process for Equity and Debt issuances in the "Fit" guide and various articles on M&I, but the basic steps are as follows:

1) **Data Gathering:** The bank meets with the company to gather information, such as the company's financial projections, sales by product and geography, and so on.

2) **Valuation:** In Equity deals, the bank values the company using the standard methodologies.

3) **Credit Analysis:** In Debt deals, the bank creates operational scenarios for the company (e.g., Base, Downside, and Upside) and estimates the credit stats and ratios in those scenarios. It focuses on the Downside case(s) to "stress test" the company.

4) **Advice:** Based on these analyses, the bank advises the company on the most appropriate pricing, valuation, and shares to offer (for Equity) or the amount and type of Debt, interest rates and principal repayment terms, covenants, redemption premiums, and other terms (for Debt).

5) **Marketing:** Next, the bank markets the company and its issuance to potential investors. This step is simple for Follow-On Offerings since the company is already public, but it's more time-consuming for IPOs, and the government gets involved more heavily.

   The process for Debt issuances could be internal (for "Bank Debt"), or it could be an external one where the bank markets the offering to institutional investors.

6) **Issuance:** If all goes well, the company issues the Debt or Equity at the agreed-upon terms. Investors buy the offering, and the company receives Cash from the sale; it can use that Cash to expand, acquire other companies, repay Debt, or issue dividends.

This process is **not** much different from the one in M&A deals.

The main difference is that the marketing process and negotiations in M&A deals are more complicated because another company is buying 100% of your client.

It takes far less effort to convince Fidelity to buy a 0.1% stake in your client than it does to convince Google to spend $20 billion on a startup you're advising.

The **financial modeling** is also different: There's barely any required for Equity deals, while you do a lot more in M&A deals (merger models, LBO models, valuations, etc.).

There is also a fair amount of modeling in Debt deals, but **it's a different kind of modeling** because you focus on the company's cash flow profile and ability to repay Debt.

But the biggest difference is that the capital markets and Leveraged Finance teams spend more time **comparing financing options for a company and recommending the best one.**

If a company wants to raise Debt, the DCM team won't say, "Sorry, we can't help" unless the company is a *horrible* candidate for Debt.

Instead, the team will say, "Sure. We think Debt with features A, B, and C is best for you. You wanted X, Y, and Z, but we think these terms are more realistic."

We've covered the differences between DCM and LevFin elsewhere, but DCM focuses on investment-grade Debt issuances that companies use "for everyday purposes."

LevFin focuses on non-investment-grade Debt that is used to fund transactions such as M&A deals and leveraged buyouts (LBOs).

There is **a lot** of overlap between the groups, and those rules are **not** universal. However, these guidelines are useful for understanding the high-level differences.

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Key Rule #2: How a Company Decides Between Debt and Equity

For this discussion, we'll use a case study of Central Japan Railway and its expansion funding efforts (for the construction of new lines between Tokyo and other cities in Japan).

In real life, there is not necessarily a step-by-step "process" for deciding between Debt and Equity.

For purposes of case studies, modeling tests, and interviews, however, **we will create one.**

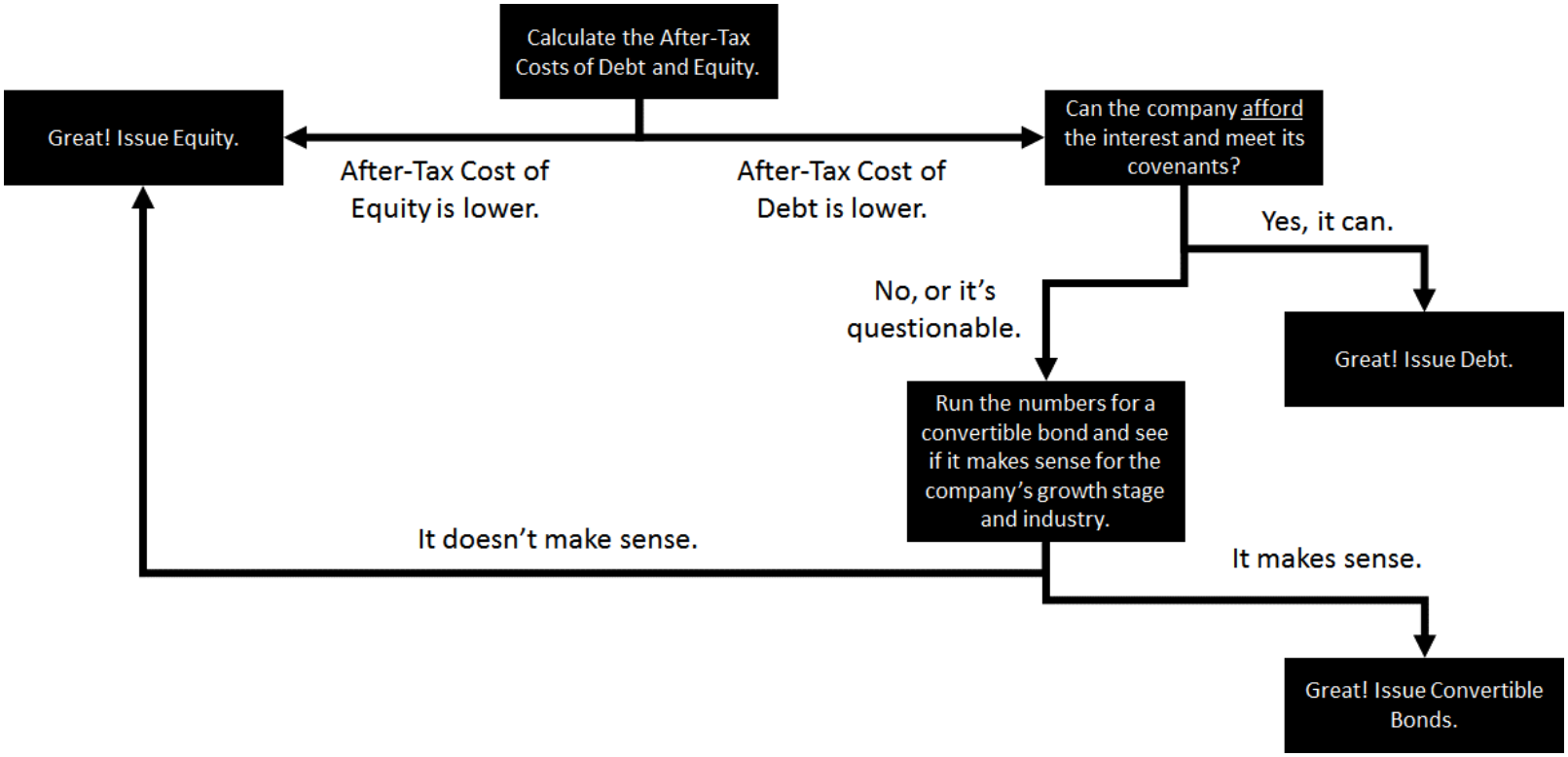
You should already know the trade-offs of Debt and Equity:

- **Debt** tends to be **cheaper** than Equity because lenders target lower returns than common shareholders; also, interest paid on Debt is tax-deductible.
- But **Debt** also incurs a **cash cost**, unlike Equity, in the form of interest expense and principal repayments.
- Also, **Debt** comes with many **restrictions** ("covenants"); lenders won't do a deal if the company's Debt / EBITDA is too high or its EBITDA / Interest is too low, for example.

- So, a company usually prefers to raise the **maximum amount of Debt** it can before issuing Equity. Debt is cheaper, but the company can raise only a limited amount.

- If this company **cannot** raise additional Debt, or if it can't raise enough Debt to cover all its funding needs, it will have to issue Equity for all or part of the funding.

Here's the flow chart:



Convertible Bonds are "low-interest" Debt that can be converted into Equity if the company's share price reaches a certain level.

They rarely have the same restrictions that normal Debt does, and they often have no interest, so they are *closer to Equity* in most cases.

However, not all companies can issue these bonds; Convertible Bond investors prefer speculative, high-growth companies with potential for significant stock-price appreciation.

This is why Convertible Bonds are common in the technology, biotech, and pharmaceutical industries, but rare for airline, manufacturing, or transportation companies.

Here's the set of steps we'll follow to **implement** the decision-making process in the diagram above:

1) Calculate the company's **After-Tax Costs of Equity and Debt** to confirm that Debt is, indeed, cheaper than Equity.

2) Create **operational scenarios**, including Upside, Base, and Downside cases, and reflect them in a cash flow projection model for the company.

3) Build a **Debt Schedule** in this model to track the company's Interest Expense, Debt Principal Repayments, and Debt and Cash balances over time.

4) Examine the company's **credit stats and ratios** in different scenarios, and pay attention to the most pessimistic ones. Reflect requirements from lenders here, such as maximum leverage or coverage ratios or a maximum Debt Service Coverage Ratio (DSCR)

5) If the company **breaches** the requirements from lenders in the more pessimistic cases (e.g., EBITDA / Interest is 5.5x, but the maximum is 5.0x), consider alternate structures, such as Convertible Bonds.

6) If Convertible Bonds are not viable, think about a **mix of Debt and Equity**. And if the company's profile is completely unsuitable for Debt, make it a 100% Equity deal.

Central Japan Railway: Case Study Overview

Here's the company's current financial profile:

- **Revenue:** ¥1.7 trillion ($17 billion USD)
- **Growth:** 1-4% historically; expected to be in a similar range over the next ~5 years.
- **Free Cash Flow:** ¥300 – ¥350 billion ($2.7 billion – $3.1 billion USD)
- **EBITDA:** ¥770 – ¥830 billion (46 – 47% margins)
- **Debt:** ¥1.3 trillion (1.6x EBITDA)
- **Equity Value:** ¥3.8 trillion
- **Net Income:** ¥331 billion
- **Tax Rate:** Approximately 33%

The company wants to spend ¥9 trillion yen ($80 billion USD) on a 10-year expansion project, with the bulk of the spending in Years 5 – 10.

It needs to raise approximately ¥1.6 trillion to pay for an **initial deposit**; none of that money will accumulate to its Cash balance.

It will also spend extra on Capital Expenditures over the next 5 years, with Expansion CapEx for this project rising from ¥110 billion in Year 1 to ¥175 billion by Year 5.

The company is considering several financing options:

1. **Option #1:** ¥1.6 trillion of Equity.

2. **Option #2:** ¥1.6 trillion of Term Loans with 10-year maturities, 5% amortization per year until maturity, a LIBOR floor of 2.0%, a LIBOR spread of 2.0%, a cash flow sweep of 50.0%, and standard maintenance covenants.

3. **Option #3:** ¥1.6 trillion of Subordinated Notes with 10-year maturities, an 8% fixed interest rate, bullet maturity with no early repayments, and only a Debt Service Coverage Ratio (DSCR) covenant and standard incurrence covenants.

We have to select one option, or a combination of them, as the best one for the company.

Step 1: Calculate the company's After-Tax Costs of Equity and Debt to confirm that Debt is, indeed, cheaper than Equity.

You can calculate the After-Tax Cost of Equity with CAPM: Take the Risk-Free Rate and add the Equity Risk Premium * Beta.

But you could also take the reciprocal of the company's current P / E multiple to estimate the After-Tax Cost of Equity.

Both methods tend to produce numbers higher than the After-Tax Cost of Debt – which you can calculate with Interest Rate on Debt * (1 – Tax Rate).

Central Japan Railway (CJR) has a P / E of ¥3.8 trillion / ¥331 billion = 11.4x, so its After-Tax Cost of Equity is 1 / 11.4 = 8.8%.

The *initial* interest rate on the Term Loans is 4.0% if we add the LIBOR floor (i.e., the *minimum* value for LIBOR) of 2.0% to the LIBOR spread of 2.0%. So:

- **After-Tax Cost of Equity (Option #1)** = 1 / 11.4x = **8.8%**

- **After-Tax Cost of Debt (Option #2)** = 4.0% * (1 – 33%) = **2.7%**

- **After-Tax Cost of Debt (Option #3)** = 8.0% * (1 – 33%) = **5.4%**

Therefore, **both Debt options are clearly cheaper than Equity**.

We could also calculate the After-Tax Cost of Equity with CAPM.

The conclusions are the same, but the numbers differ:

- **Risk-Free Rate:** 0.1%
- **Equity Risk Premium:** ~7% (Based on Japan's credit rating and a slight premium to the U.S. ERP)
- **Beta:** 0.8 (Based on historical numbers and comparable companies)

After-Tax Cost of Equity via CAPM = 0.1% + 7% * 0.8 = **5.7%**

No matter how you measure it, **Equity is more expensive than Debt**.

Therefore, CJR should consider a Debt issuance before it thinks about Equity.

Of the Debt options, the Term Loans are cheaper than the Subordinated Notes, so we'll start there:

Step 2: Create operational scenarios, including Upside, Base, and Downside cases, and reflect them in a cash flow projection model for the company.

Coming up with full operational scenarios for a company is beyond the scope of this guide, but you *usually* use the following approach:

- **Upside Case:** Highest revenue growth, operating margins, and Free Cash Flow; in-line with management's optimistic expectations.
- **Base Case:** Slightly lower figures for all of those; in-line with the consensus forecasts for the company.
- **Downside Case:** Slightly lower figures than the Base Case; represents what might happen if the company underperforms by a fair amount.
- **Extreme Downside Case:** Significantly lower figures than the Base Case; represents a "catastrophic outcome" where everything goes wrong.

Here's the approach we used for CJR:

Revenue and Expense Drivers:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Days in Year:	# Days	365	365	365	366	365
Passenger-Kilometers:	Millions	62,959	64,706	66,172	67,518	68,512
Operating Kilometers:	Kilometers	1,975	1,990	2,005	2,020	2,035
Average Traffic Density:		87,337	89,084	90,420	91,324	92,237
Scenarios - Traffic Density Growth Rates:						
Upside	%	6.0%	6.0%	5.0%	5.0%	4.0%
Base	%	2.5%	2.0%	1.5%	1.0%	1.0%
Downside	%	0.0%	0.0%	(1.0%)	(1.0%)	(1.0%)
Extreme Downside	%	(1.0%)	(1.0%)	(2.0%)	(2.0%)	(2.0%)
Selected Scenario:	%	**2.5%**	**2.0%**	**1.5%**	**1.0%**	**1.0%**
Transportation Revenue per Passenger-Kilometer:	JPY as Stated	22.096	22.096	22.096	22.096	22.096

Mature business, so total railroad length isn't increasing by much.

Company has a near-monopoly, so there's not THAT big a difference between the cases.

Government-regulated ticket prices.

On the expense side, we focused on the company's **operating margins** and its **Capital Expenditures** since they are the key drivers for transportation/logistics businesses:

Revenue and Expense Drivers:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Scenarios - Transportation Operating Margin:						
Upside	%	41.0%	41.0%	41.5%	41.5%	42.0%
Base	%	40.5%	40.5%	40.0%	40.0%	40.0%
Downside	%	40.0%	39.5%	39.0%	38.5%	38.0%
Extreme Downside	%	40.0%	39.0%	38.0%	37.0%	36.0%
Selected Scenario:	%	**40.5%**	**40.5%**	**40.0%**	**40.0%**	**40.0%**
Scenarios - CapEx per Operating Kilometer:						
Upside	JPY B / Kilo.	0.104	0.103	0.102	0.101	0.100
Base	JPY B / Kilo.	0.105	0.105	0.106	0.106	0.107
Downside	JPY B / Kilo.	0.106	0.107	0.108	0.109	0.110
Extreme Downside	JPY B / Kilo.	0.107	0.109	0.111	0.112	0.113
Selected Scenario:	JPY B / Kilo.	**0.105**	**0.105**	**0.106**	**0.106**	**0.107**

Mature business with regulated prices, so differences are not massive.

This is all Maintenance CapEx; more spending in pessimistic cases.

For the other items – Deferred Taxes, the Change in Working Capital, and revenue and expenses in non-core segments – we used simple percentage assumptions.

As with a valuation, we only need **cash flow projections** for the company – not a full 3-statement model. Our Base Case projections are shown below:

Cash Flow Projections:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Operating Revenue:						
(+) Transportation:	*JPY B*	¥ 1,391.1	¥ 1,429.7	¥ 1,462.1	¥ 1,491.9	¥ 1,513.8
(+) Retail, Real Estate, and Other:	*JPY B*	395.5	411.3	425.7	440.6	456.0
Total Operating Revenue:	*JPY B*	**1,786.6**	**1,841.0**	**1,887.8**	**1,932.4**	**1,969.8**
Revenue Growth:	*%*	*2.8%*	*3.0%*	*2.5%*	*2.4%*	*1.9%*
Operating Income:						
(+) Transportation:	*JPY B*	563.4	579.0	584.8	596.7	605.5
(+) Retail, Real Estate, and Other:	*JPY B*	23.7	24.7	25.5	26.4	27.4
Total Operating Income:	*JPY B*	**587.1**	**603.7**	**610.4**	**623.2**	**632.9**
Operating Margin:	*%*	*32.9%*	*32.8%*	*32.3%*	*32.2%*	*32.1%*
(+) Depreciation & Amortization:	*JPY B*	243.4	250.2	248.6	253.6	257.3
EBITDA:	*JPY B*	**830.6**	**853.9**	**858.9**	**876.8**	**890.2**
EBITDA Margin:	*%*	*46.5%*	*46.4%*	*45.5%*	*45.4%*	*45.2%*
Operating Income:	*JPY B*	**587.1**	**603.7**	**610.4**	**623.2**	**632.9**
(+) Interest Income:	*JPY B*	???	???	???	???	???
(-) Interest Expense:	*JPY B*	???	???	???	???	???
(-) Other Expenses:	*JPY B*	(18.9)	(19.5)	(20.0)	(20.5)	(20.9)
Pre-Tax Income:	*JPY B*	**568.2**	**584.2**	**590.4**	**602.7**	**612.0**
(-) Income Taxes:	*JPY B*	(185.8)	(191.0)	(193.1)	(197.1)	(200.1)
Net Income to Parent:	*JPY B*	**382.4**	**393.2**	**397.3**	**405.6**	**411.9**
(+) Depreciation & Amortization:	*JPY B*	243.4	250.2	248.6	253.6	257.3
(+/-) Deferred Taxes:	*JPY B*	14.0	14.4	14.6	14.9	15.1
(+/-) Changes in Operating Assets & Liabilities:	*JPY B*	(16.4)	(18.0)	(15.0)	(13.8)	(11.2)
(+/-) Other Cash Flow Items:	*JPY B*	30.4	31.3	32.1	32.9	33.5
(-) Capital Expenditures:	*JPY B*	(207.4)	(209.0)	(212.5)	(214.1)	(217.7)
(-) Capital Expenditures - Chuo Shinkansen:	*JPY B*	(110.0)	(150.0)	(175.0)	(175.0)	(175.0)
(-) Dividends:	*JPY B*	(31.5)	(32.3)	(32.7)	(33.4)	(33.9)
Free Cash Flow Less Dividends:	*JPY B*	**305.1**	**279.9**	**257.4**	**270.7**	**280.1**

Interest will come from the Debt Schedule.

Growth CapEx.

We include **Dividends** because we're assuming that the company will continue to issue them even after raising funding for this expansion plan.

But Dividends are **not** part of the standard definition of Free Cash Flow, so we've labeled the line item "Free Cash Flow Less Dividends" instead.

Step 3: Build a Debt Schedule in this model to track the company's Interest Expense, Debt Principal Repayments, and Debt and Cash balances over time.

Next, we have to build a **Debt Schedule**.

To test it, we'll assume a 50/50 split between Term Loans and Subordinated Notes:

Financing Assumptions:	x EBITDA:	Initial Amount:	Initial After-Tax Cost:	LIBOR Floor:	LIBOR Spread:	Fixed Rate:	Annual Amortization:	Cash Flow Sweep %:
Revolver:	0.0 x	¥ -	2.4%	1.50%	2.00%		0.0%	100.0%
Existing Unsecured Bonds:	1.6 x	1,338.3	3.0%			4.50%	0.0%	N/A
New Term Loans:	1.0 x	821.0	2.7%	2.00%	2.00%		5.0%	50.0%
New Subordinated Notes:	1.0 x	821.0	5.4%			8.00%	0.0%	0.0%
New Equity:	0.0 x	-	8.7%					
Cash:	0.4 x	347.9			0.50%			
Total Expansion Funding:	**2.0 x**	**1,642.1**						

Temporary; 50/50 split.

Once the Debt Schedule is finished, we'll start with 100% Term Loans and see if the numbers hold up before looking at more expensive funding sources.

We've already covered the setup of a Debt Schedule in the lessons on LBO models, so we're not going to repeat everything here.

Instead, we'll paste in parts of the model and make a few notes on the key points:

Debt Schedule:	*Units:*	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Cash Flow Available for Debt Repayment:						
Cash - Beginning of Period:	*JPY B*	347.9	250.8	199.2	174.6	157.3
(+) Free Cash Flow:	*JPY B*	206.9	189.3	173.1	191.6	206.2
(-) Maturities and Mandatory Repayments:	*JPY B*	(153.3)	(141.6)	(123.1)	(151.5)	(99.4)
(-) Minimum Cash:	*JPY B*	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
Cash Flow Available for Debt Repayment:	*JPY B*	**301.5**	**198.5**	**149.2**	**114.6**	**164.1**
(+) Revolver Draw / (-) Repayment:	*JPY B*	-	-	-	-	-
Cash Flow Available for New Term Loans:	*JPY B*	**301.5**	**198.5**	**149.2**	**114.6**	**164.1**
(-) Optional Repayments of New Term Loans:	*JPY B*	(150.8)	(99.2)	(74.6)	(57.3)	(82.0)
Cash Flow Available for New Subordinated Notes:	*JPY B*	**150.8**	**99.2**	**74.6**	**57.3**	**82.0**
(-) Optional Repayments of New Subordinated Notes:	*JPY B*	-	-	-	-	-
Cash Generated Above Minimum Balance:	*JPY B*	**150.8**	**99.2**	**74.6**	**57.3**	**82.0**
Revolver:						
BoP Revolver:	*JPY B*	-	-	-	-	-
(+) Revolver Draw:	*JPY B*	-	-	-	-	-
(-) Revolver Repayment:	*JPY B*	-	-	-	-	-
EoP Revolver:	*JPY B*	**-**	**-**	**-**	**-**	**-**

Equal to the initial Cash plus the Cash the company generates minus mandatory repayments and its Min Cash.

Allot some % of cash flow available to optional Term Loan repayments.

No Revolver draws needed; FCF very positive.

We separate the Debt into tranches (Term Loans and Subordinated Notes) and calculate Mandatory Repayments/Maturities and Optional Repayments for each one below.

A "Cash Flow Sweep" of 50% means the company must use 50% of its available cash flow to repay Debt principal each year.

This is known as an "Optional Repayment" since the company repays nothing if it has no cash flow available:

Debt Schedule:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Existing Unsecured Bonds:						
BoP Existing Unsecured Bonds:	*JPY B*	1,338.3	1,226.1	1,125.5	1,043.5	933.0
(-) Maturities:	*JPY B*	(112.2)	(100.6)	(82.0)	(110.5)	(58.4)
EoP Existing Unsecured Bonds:	*JPY B*	**1,226.1**	**1,125.5**	**1,043.5**	**933.0**	**874.6**
New Term Loans:						
BoP New Term Loans:	*JPY B*	821.0	629.2	489.0	373.3	274.9
(-) Mandatory Repayments:	*JPY B*	(41.1)	(41.1)	(41.1)	(41.1)	(41.1)
(-) Optional Repayments:	*JPY B*	(150.8)	(99.2)	(74.6)	(57.3)	(82.0)
EoP New Term Loans:	*JPY B*	**629.2**	**489.0**	**373.3**	**274.9**	**151.8**
New Subordinated Notes:						
BoP New Subordinated Notes:	*JPY B*	821.0	821.0	821.0	821.0	821.0
(-) Mandatory Repayments:	*JPY B*	-	-	-	-	-
(-) Optional Repayments:	*JPY B*	-	-	-	-	-
EoP New Subordinated Notes:	*JPY B*	**821.0**	**821.0**	**821.0**	**821.0**	**821.0**

Existing Debt has fixed repayments.

5% amortization and 50% cash flow sweep.

Bullet maturity.

With that schedule set up, we can calculate the Net Interest Expense at the top and link it to the cash flow projections:

Debt Schedule:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
LIBOR:	%	1.20%	1.50%	1.80%	2.00%	2.20%
Interest Rates on Debt and Cash:						
Revolver:	%	3.50%	3.50%	3.80%	4.00%	4.20%
Existing Unsecured Bonds:	%	4.50%	4.50%	4.50%	4.50%	4.50%
New Term Loans:	%	4.00%	4.00%	4.00%	4.00%	4.20%
New Subordinated Notes:	%	8.00%	8.00%	8.00%	8.00%	8.00%
Cash:	%	1.70%	2.00%	2.30%	2.50%	2.70%
Net Interest Expense:						
(+) Revolver:	*JPY B*	-	-	-	-	-
(+) Existing Unsecured Bonds:	*JPY B*	60.2	55.2	50.6	47.0	42.0
(+) New Term Loans:	*JPY B*	32.8	25.2	19.6	14.9	11.5
(+) New Subordinated Notes:	*JPY B*	65.7	65.7	65.7	65.7	65.7
(-) Interest Earned on Cash:	*JPY B*	(5.9)	(5.0)	(4.6)	(4.4)	(4.2)
Net Interest Expense:	*JPY B*	**152.8**	**141.0**	**131.3**	**123.2**	**115.0**

Step 4: Examine the company's credit stats and ratios in different scenarios, and pay attention to the most pessimistic ones. Reflect requirements from lenders here, such as maximum leverage or coverage ratios or a maximum Debt Service Coverage Ratio (DSCR).

In this last step, we **evaluate the credit stats and ratios** in different cases.

The **covenants** for the Term Loans are as follows:

- **Maximum Debt / EBITDA** of 4.0x, scaling down to 3.0x by Year 5.
- **Maximum Net Debt / EBITDA** of 3.7x, scaling down to 2.5x by Year 5.
- **Minimum EBITDA / Interest** of 4.0x in all years.
- **Minimum Debt Service Coverage Ratio (DSCR)** of 1.1x, scaling up to 1.2x by Year 5.

The only financial covenant for the Subordinated Notes is the last one: A minimum DSCR of 1.1x scaling up to 1.2x by Year 5.

The "Debt Service Coverage Ratio" is defined as (Free Cash Flow Less Dividends + Interest Expense) / (Mandatory Debt Repayments and Maturities + Interest Expense).

The numerator measures how much cash flow a company has available for Debt service – that's why we add back the Interest Expense – and the denominator measures its spending on Debt service.

Lenders get concerned if this figure approaches 1x because it indicates that the company may have trouble "servicing" its Debt, i.e. paying for the Interest and Principal.

The world will not explode if the company violates these covenants, but the company will incur penalty fees, and lenders may force it to pay higher interest rates.

Also, the company's credit rating will be downgraded, which will increase its borrowing costs and make it more difficult to borrow in the future.

Lenders are also unlikely to fund a deal where there's a decent chance of covenant violations; they have very limited upside but a ton of downside risk (i.e., losing everything).

Since Term Loans are the cheapest funding source, we'll start there.

In the screenshot below, we've set the model to the **Base Case** (for revenue growth, operating margins, and CapEx) and **100% Term Loans** (2x EBITDA at ¥1.6 trillion):

Credit Stats and Ratios:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
EBITDA:	JPY B	830.6	853.9	858.9	876.8	890.2
Interest Expense:	JPY B	125.9	111.9	100.7	91.5	83.6
Total Capital:	JPY B	5,238.5	5,265.9	5,348.9	5,434.6	5,558.7
Net Capital:	JPY B	4,997.8	5,081.3	5,190.9	5,294.6	5,394.6
Total Debt / EBITDA:	x	3.18 x	2.78 x	2.51 x	2.19 x	1.93 x
Maximum Total Debt / EBITDA:	x	4.00 x	3.75 x	3.50 x	3.25 x	3.00 x
Net Debt / EBITDA:	x	2.89 x	2.57 x	2.33 x	2.03 x	1.75 x
Maximum Net Debt / EBITDA:	x	3.70 x	3.40 x	3.10 x	2.80 x	2.50 x
EBITDA / Interest Expense:	x	6.6 x	7.6 x	8.5 x	9.6 x	10.7 x
Minimum EBITDA / Interest Expense:	x	4.0 x	4.0 x	4.0 x	4.0 x	4.0 x
Total Debt / Equity:	x	1.0 x	0.8 x	0.7 x	0.5 x	0.4 x
Total Debt / Capital:	%	50.5%	45.2%	40.3%	35.4%	30.9%
Cumulative Debt Paydown:	JPY B	335.1	602.4	824.5	1,057.0	1,261.6
Cumulative Paydown % Initial Debt:	%	11.2%	20.2%	27.7%	35.5%	42.3%
Debt Service Coverage Ratio (DSCR):	x	1.11 x	1.10 x	1.12 x	1.08 x	1.39 x
Minimum DSCR:	x	1.10 x	1.10 x	1.15 x	1.15 x	1.20 x
Revenue Growth:	%	2.8%	3.0%	2.5%	2.4%	1.9%
Operating Margin:	%	32.9%	32.8%	32.3%	32.2%	32.1%
EBITDA Margin:	%	46.5%	46.4%	45.5%	45.4%	45.2%
Net Margin:	%	16.9%	17.4%	17.6%	17.9%	18.2%

The leverage ratio and interest coverage ratio covenants are all easy to meet. If we JUST had these requirements, 100% Term Loans would work.

But we run into serious trouble with the DSCR covenant, and this is only the Base Case. This one will be the key constraint in this analysis.

Things get even worse in the pessimistic cases:

Downside Case:

Credit Stats and Ratios:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Total Debt / EBITDA:	x	3.30 x	2.99 x	2.80 x	2.60 x	2.45 x
Maximum Total Debt / EBITDA:	x	4.00 x	3.75 x	3.50 x	3.25 x	3.00 x
Net Debt / EBITDA:	x	3.00 x	2.78 x	2.64 x	2.47 x	2.32 x
Maximum Net Debt / EBITDA:	x	3.70 x	3.40 x	3.10 x	2.80 x	2.50 x
EBITDA / Interest Expense:	x	6.4 x	7.2 x	7.8 x	8.4 x	8.8 x
Minimum EBITDA / Interest Expense:	x	4.0 x	4.0 x	4.0 x	4.0 x	4.0 x
Debt Service Coverage Ratio (DSCR):	x	1.07 x	0.99 x	0.95 x	0.84 x	1.01 x
Minimum DSCR:	x	1.10 x	1.10 x	1.15 x	1.15 x	1.20 x

Extreme Downside Case:

Credit Stats and Ratios:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Total Debt / EBITDA:	x	3.33 x	3.08 x	2.97 x	2.89 x	2.86 x
Maximum Total Debt / EBITDA:	x	4.00 x	3.75 x	3.50 x	3.25 x	3.00 x
Net Debt / EBITDA:	x	3.04 x	2.88 x	2.83 x	2.76 x	2.72 x
Maximum Net Debt / EBITDA:	x	3.70 x	3.40 x	3.10 x	2.80 x	2.50 x
EBITDA / Interest Expense:	x	6.3 x	7.0 x	7.4 x	7.7 x	7.7 x
Minimum EBITDA / Interest Expense:	x	4.0 x	4.0 x	4.0 x	4.0 x	4.0 x
Debt Service Coverage Ratio (DSCR):	x	1.06 x	0.94 x	0.84 x	0.71 x	0.79 x
Minimum DSCR:	x	1.10 x	1.10 x	1.15 x	1.15 x	1.20 x

Lenders would *never* approve of 2x Term Loans for this company because of the consistently-breached DSCR covenant in the Base and Downside cases.

Next, we can try 100% Subordinated Notes instead of 100% Term Loans.

The interest expense will be higher, but there will be **no principal repayments**, so the DSCR might look better.

Also, the other covenants (Total Debt / EBITDA, Net Debt / EBITDA, and EBITDA / Interest) don't apply to the Subordinated Notes.

Here are the credit stats and ratios in each case with 2x Subordinated Notes:

Base Case:

Credit Stats and Ratios:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Total Debt / EBITDA:	x	3.45 x	3.24 x	3.13 x	2.94 x	2.83 x
Maximum Total Debt / EBITDA:	x	4.00 x	3.75 x	3.50 x	3.25 x	3.00 x
Net Debt / EBITDA:	x	2.95 x	2.67 x	2.48 x	2.25 x	2.01 x
Maximum Net Debt / EBITDA:	x	3.70 x	3.40 x	3.10 x	2.80 x	2.50 x
EBITDA / Interest Expense:	x	4.3 x	4.6 x	4.7 x	4.9 x	5.1 x
Minimum EBITDA / Interest Expense:	x	4.0 x	4.0 x	4.0 x	4.0 x	4.0 x
Debt Service Coverage Ratio (DSCR):	x	1.24 x	1.23 x	1.25 x	1.19 x	1.52 x
Minimum DSCR:	x	1.10 x	1.10 x	1.15 x	1.15 x	1.20 x

Downside Case:

Credit Stats and Ratios:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Total Debt / EBITDA:	x	3.57 x	3.44 x	3.40 x	3.29 x	3.25 x
Maximum Total Debt / EBITDA:	x	4.00 x	3.75 x	3.50 x	3.25 x	3.00 x
Net Debt / EBITDA:	x	3.06 x	2.89 x	2.81 x	2.71 x	2.62 x
Maximum Net Debt / EBITDA:	x	3.70 x	3.40 x	3.10 x	2.80 x	2.50 x
EBITDA / Interest Expense:	x	4.2 x	4.3 x	4.3 x	4.4 x	4.5 x
Minimum EBITDA / Interest Expense:	x	4.0 x	4.0 x	4.0 x	4.0 x	4.0 x
Debt Service Coverage Ratio (DSCR):	x	1.21 x	1.12 x	1.08 x	0.96 x	1.15 x
Minimum DSCR:	x	1.10 x	1.10 x	1.15 x	1.15 x	1.20 x

Irrelevant; these covenants don't exist for Sub Notes.

Extreme Downside Case:

Credit Stats and Ratios:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Total Debt / EBITDA:	x	3.60 x	3.54 x	3.56 x	3.51 x	3.54 x
Maximum Total Debt / EBITDA:	x	4.00 x	3.75 x	3.50 x	3.25 x	3.00 x
Net Debt / EBITDA:	x	3.09 x	2.99 x	3.01 x	3.01 x	3.04 x
Maximum Net Debt / EBITDA:	x	3.70 x	3.40 x	3.10 x	2.80 x	2.50 x
EBITDA / Interest Expense:	x	4.2 x	4.2 x	4.1 x	4.1 x	4.1 x
Minimum EBITDA / Interest Expense:	x	4.0 x	4.0 x	4.0 x	4.0 x	4.0 x
Debt Service Coverage Ratio (DSCR):	x	1.20 x	1.06 x	0.97 x	0.82 x	0.94 x
Minimum DSCR:	x	1.10 x	1.10 x	1.15 x	1.15 x	1.20 x

Irrelevant; these covenants don't exist for Sub Notes.

The DSCR figures look a bit better with Subordinated Notes, but we're still not even close to complying with the minimum figures, especially in the Extreme Downside Case.

As a result, we conclude that neither 100% Term Loans nor 100% Subordinated Notes are ideal.

Step 5: If the company breaches the requirements from lenders in the more pessimistic cases (e.g., EBITDA / Interest is 5.5x, but the maximum is 5.0x), consider alternate structures, such as Convertible Bonds.

Convertible Bonds offer significantly lower interest rates than traditional Debt, along with no principal repayments and no covenants.

In exchange for the lower interest rates, investors receive the option to convert the bonds into common shares once the company's share price reaches a certain level (typically a 20-40% premium to its current share price).

If we "simulate" Convertible Bonds by making the interest rate on the Subordinated Notes much lower – 2% rather than 8% – they seem to solve our problems.

Here are the credit stats and ratios in the **Extreme Downside Case**:

Credit Stats and Ratios:	*Units:*	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Total Debt / EBITDA:	*x*	3.60 x	3.54 x	3.56 x	3.51 x	3.54 x
Maximum Total Debt / EBITDA:	*x*	4.00 x	3.75 x	3.50 x	3.25 x	3.00 x
Net Debt / EBITDA:	*x*	3.01 x	2.83 x	2.75 x	2.65 x	2.58 x
Maximum Net Debt / EBITDA:	*x*	3.70 x	3.40 x	3.10 x	2.80 x	2.50 x
EBITDA / Interest Expense:	*x*	8.6 x	8.9 x	9.0 x	9.2 x	9.5 x
Minimum EBITDA / Interest Expense:	*x*	4.0 x	4.0 x	4.0 x	4.0 x	4.0 x
Debt Service Coverage Ratio (DSCR):	*x*	1.60 x	1.43 x	1.35 x	1.08 x	1.40 x
Minimum DSCR:	*x*	1.10 x	1.10 x	1.15 x	1.15 x	1.20 x

Again, the ones at the top are irrelevant. Even the DSCR covenant may not exist for a Convertible Bond.

But there's one big problem: Not all companies can issue Convertible Bonds.

Convertible Bonds are like "hedged equity investments," especially if the Bonds pay no interest.

Let's say the company's share price is currently $20.00, and the Conversion Price of the bonds is $30.00.

Think about what happens to the Convertible Bond investors as the share price changes:

- **Share Price Increases to $30.00:** Investors convert the bonds into shares, and their investment increases from $20.00 to $30.00 (50% gain).
- **Share Price Increases to $50.00:** The same, but now the investors get $50.00 rather than $30.00, for a 150% gain.
- **Share Price Decreases to $15.00:** If the share price stays here, the investors still get back the full bond principal upon maturity. They don't lose money.
- **Share Price Decreases to $1.00:** The same. Investors don't lose money!

But a company like Central Japan Railway (CJR) would find it very difficult to issue Convertible Bonds because its potential for share-price appreciation is so low.

It's a mature business with predictable, limited growth, and its cash flows are unlikely to change much over the next few years, so its share price is also unlikely to change.

The company's share price is unlikely to increase by 20-30% anytime soon, so investors would look at a Convertible Bond from the company and say, "So… I'm getting low-yielding Debt with almost no potential for conversion to equity. No thanks!"

Step 6: If Convertible Bonds are not viable, think about a mix of Debt and Equity. And if the company's profile is completely unsuitable for Debt, make it a 100% Equity deal.

Since 100% Term Loans don't work, 100% Subordinated Notes don't work, and Convertible Bonds aren't feasible, the next best idea is **Equity.**

The DSCR figures looked better with the Subordinated Notes, so we can start by assuming a 50/50 split between Subordinated Notes and Equity:

Financing Assumptions:	x EBITDA:	Initial Amount:	Initial After-Tax Cost:	LIBOR Floor:	LIBOR Spread:	Fixed Rate:	Annual Amortization:	Cash Flow Sweep %:
Revolver:	0.0 x	¥ -	2.4%	1.50%	2.00%		0.0%	100.0%
Existing Unsecured Bonds:	1.6 x	1,338.3	3.0%			4.50%	0.0%	N/A
New Term Loans:	0.0 x	-	2.7%	2.00%	2.00%		5.0%	50.0%
New Subordinated Notes:	1.0 x	821.0	5.4%			8.00%	0.0%	0.0%
New Equity:	1.0 x	821.0	8.7%					
Cash:	0.4 x	347.9			0.50%			
Total Expansion Funding:	**2.0 x**	**1,642.1**						

In the **Downside Case**, we comply with most of the DSCR covenants:

Credit Stats and Ratios:	*Units:*	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Total Debt / EBITDA:	*x*	2.55 x	2.42 x	2.36 x	2.24 x	2.19 x
Maximum Total Debt / EBITDA:	*x*	4.00 x	3.75 x	3.50 x	3.25 x	3.00 x
Net Debt / EBITDA:	*x*	1.98 x	1.76 x	1.61 x	1.44 x	1.28 x
Maximum Net Debt / EBITDA:	*x*	3.70 x	3.40 x	3.10 x	2.80 x	2.50 x
EBITDA / Interest Expense:	*x*	6.4 x	6.7 x	6.8 x	7.0 x	7.2 x
Minimum EBITDA / Interest Expense:	*x*	4.0 x	4.0 x	4.0 x	4.0 x	4.0 x
Debt Service Coverage Ratio (DSCR):	*x*	1.44 x	1.34 x	1.32 x	1.14 x	1.48 x
Minimum DSCR:	*x*	1.10 x	1.10 x	1.15 x	1.15 x	1.20 x

Year 4 is still problematic in the **Extreme Downside Case**, but it's also problematic with almost any amount of Debt:

Credit Stats and Ratios:	Units:	Projected FY 17	FY 18	FY 19	FY 20	FY 21
Total Debt / EBITDA:	x	2.57 x	2.49 x	2.47 x	2.39 x	2.38 x
Maximum Total Debt / EBITDA:	x	4.00 x	3.75 x	3.50 x	3.25 x	3.00 x
Net Debt / EBITDA:	x	2.01 x	1.84 x	1.75 x	1.65 x	1.58 x
Maximum Net Debt / EBITDA:	x	3.70 x	3.40 x	3.10 x	2.80 x	2.50 x
EBITDA / Interest Expense:	x	6.3 x	6.5 x	6.5 x	6.5 x	6.6 x
Minimum EBITDA / Interest Expense:	x	4.0 x	4.0 x	4.0 x	4.0 x	4.0 x
Debt Service Coverage Ratio (DSCR):	x	1.43 x	1.27 x	1.18 x	0.97 x	1.19 x
Minimum DSCR:	x	1.10 x	1.10 x	1.15 x	1.15 x	1.20 x

We could keep going, but it seems like 50% Subordinated Notes and 50% Equity is a decent solution.

Year 4 is still problematic, but the Extreme Downside Case is not terribly likely.

And if lenders view it as unlikely, they might not care about this point at all.

Even if they do think it's an issue, there are other solutions.

For example, the company could reduce CapEx spending in Year 4, or it could refinance some of its Debt with new Equity around then.

Based on that entire process, we could make a financing recommendation:

"We recommend a 50/50 split between **Equity** and **Subordinated Notes** at the terms indicated above (10-year maturity, 8% fixed interest, bullet maturity, and a DSCR covenant of 1.1x to 1.2x over 5 years).

Term Loans are not possible because the company cannot meet the minimum DSCR covenant in all years in the Downside and Extreme Downside cases.

Even with a 50/50 split between Term Loans and Equity, the company would still violate the DSCR covenants in Years 3 – 5.

The 5% amortization and existing maturities add up to nearly ¥200 billion in some years, which, when added to the Interest Expense, exceeds the cash flow available for debt service.

Even in the *Base Case*, the company would have trouble complying with this covenant.

The Subordinated Notes are better because there is no amortization, even though the interest rate is higher.

The company would comply with its DSCR covenant in the Base Case and would come close to complying in the Downside Case.

In the Extreme Downside Case, the company would still have trouble complying in Years 2 – 4, so an Equity issuance for half the funding (1x EBITDA) would help.

At this level, the company would comply with the DSCR covenant in all periods except Year 4, and it would nearly comply in Year 5.

If we focus on the Downside Case because we don't believe the Extreme Downside Case is plausible, we could use 75% Subordinated Notes and 25% Equity. With that mix, the company would comply in all periods except Year 4."

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Interview Questions

These questions are primarily for **investment banking interviews** in groups such as Equity Capital Markets (ECM), Debt Capital Markets (DCM), and Leveraged Finance (LevFin).

We covered many Debt-related questions in the technical guide(s) to Leveraged Buyouts and LBO modeling, so we will **not** repeat all of those questions here.

You are unlikely to receive questions on these topics in private equity interviews, but they could come up if you interview at a **credit fund** rather than a traditional PE fund.

You could also get questions on these topics if you interview at a hedge fund that uses strategies such as Convertible Bond Arbitrage or otherwise invests in companies' credit.

You are **not** likely to receive questions on these topics in interviews for corporate finance, corporate development, or equity research roles.

Debt vs. Equity

Questions on Debt vs. Equity span a wide range, from the advantages and disadvantages of each one to exceptions and special cases and the decision-making process.

1. Why would a company issue Debt rather than Equity?

A company would issue Debt if it is cheaper than Equity, as it normally is, and the company is **capable** of issuing additional Debt because its leverage ratio, interest coverage ratio, and other credit stats and ratios are in acceptable ranges.

Most companies have a "maximum" Debt / EBITDA or Net Debt / EBITDA that they do not want to exceed, so you would check that figure with this new Debt included.

2. Why might a company issue a Convertible Bond rather than traditional Debt or Equity?

A Convertible Bond is a compromise solution that lets companies borrow more cheaply than they could with traditional Debt – but with possible share dilution in the future if the bonds convert into shares.

A company might issue a Convertible Bond if Debt is cheaper than Equity for the company, but it has trouble meeting its targeted credit stats and ratios with a normal Debt issuance.

Also, the company must be in an appropriate industry and at the right growth stage. High-risk, high-growth companies in industries such as technology and biotech tend to issue Convertible Bonds more often than those in other industries.

3. Why might a company issue Equity even when Debt is cheaper for the company?

Not all companies can issue additional Debt because of restrictions on ratios such as Debt / EBITDA and EBITDA / Interest.

For example, if a company already has 5x Debt / EBITDA, and lenders have said they're unwilling to lend the company anything beyond that, the company must issue Equity.

4. How can you determine whether Equity or Debt is cheaper?

You use the same approach as in a WACC analysis: Calculate the Cost of Equity with Risk-Free Rate + Levered Beta * Equity Risk Premium, and calculate the Cost of Debt with Interest Rate on Debt or Similar Debt Issuances * (1 – Tax Rate).

You could also use the YTM, Current Yield, or various other metrics instead of the Interest Rate on the company's current Debt.

You could also calculate Cost of Equity by taking the reciprocal of the company's P / E multiple (e.g., 10x P / E means a 10% Cost of Equity since 1 / 10 = 10%).

Both methods tend to produce results showing that Equity is more expensive, but the numbers may differ significantly.

5. How might you evaluate whether a company should raise capital via Equity, Term Loans, or Subordinated Notes?

You always start with the cheapest form of financing – Term Loans in this case. You would create different operational scenarios for the company, project its cash flow, and evaluate how well it can comply with the maintenance covenants and other restrictions on the Term Loans, particularly in the Downside cases.

If it does well, great; go with the Term Loans. If not, consider Subordinated Notes next since they lack the same restrictions as Term Loans, and they're still cheaper than Equity.

If the company's credit stats and ratios decline too much in the Downside cases (e.g., its EBITDA / Interest falls to 1.5x when the company doesn't want to go below 2x), then you have to consider Equity, the most expensive funding source.

You might then try combinations of Debt and Equity to get the cheapest financing that also lets the company meet its targeted credit stats and ratios.

6. What does it mean if a company can't comply with maintenance covenants on Term Loans in the Downside or Extreme Downside cases?

It means that lenders won't fund the Term Loans, so you have to consider different loans with different covenants, or consider Equity financing (in whole or in part).

Lenders focus on the Downside cases because they have limited upside but huge potential downside; it doesn't mean much if the company complies with the covenants in the Base case.

7. If a company can't comply with a Debt Service Coverage Ratio (DSCR) ratio covenant on its Term Loans, should it consider junior Debt instead?

Not necessarily. The Debt Service Coverage Ratio measures the cash flow available for required principal repayments + interest payments on Debt.

"Junior Debt" such as Unsecured Senior Notes and Subordinated Notes has higher interest rates but no principal repayments, so the company may be able to service that Debt more easily.

However, there is another option as well: Use Term Loans that lack significant principal repayments (such as Term Loans B or C rather than A) or ones that lack maintenance covenants ("covenant-lite" loans).

8. Why might a company consider Mezzanine or Preferred Stock financing rather than Subordinated Notes?

All these forms of Debt lack maintenance covenants, and the interest rates on Mezzanine and Preferred Stock are almost always higher than the rates on Subordinated Notes, so it can't be an issue of cost.

The most likely reason is that the company already has too much Debt, so Subordinated Note investors won't invest, and the company must consider higher-cost financing.

Another reason might be that the company cannot afford cash interest on the Subordinated Notes, but the Mezzanine and Preferred Stock provide a "Payment-in-Kind" (PIK) option where the interest accrues to the loan principal, reducing the company's cash expenses.

9. If a company has trouble meeting its covenants on a Debt issuance, when should it start to consider Equity instead?

Only after the company has already explored other forms of Debt, such as Senior Notes and Subordinated Notes, which are more expensive than Term Loans but which lack maintenance covenants.

If those more expensive forms of Debt still don't work, then the company should consider Convertible Bonds if it is an ideal candidate for issuing them.

And if all those cheaper financing sources still don't work, then the company should consider Equity as a last resort since it is almost always the most expensive financing method.

10. A mature manufacturing company is already levered at 5x Debt / EBITDA, and lenders have been unwilling to fund additional Term Loans, Senior Notes, or Subordinated Notes because of concerns over the company's leverage and credit rating.

The company wants to issue Convertible Bonds instead to get around this problem. Why might it NOT be able to issue them?

The problem is that this is a mature company in an established industry, so there are little growth potential and little upside in the company's stock price.

Convertible Bonds are closer to Equity than Debt because they're a "hedged" way to invest in a company's shares, so Convertible Bond investors almost always favor speculative, higher-growth companies.

This company might be able to issue Convertible Bonds if it were in a higher-growth segment of the manufacturing industry, or its stock price had significant perceived upside (e.g., many investors felt the company was significantly undervalued).

11. You're considering 3 companies that want to raise capital: A utility company, a railroad company, and a branded pharmaceutical company.

Which company is most appropriate for 100% Equity, which one is most appropriate for 50% Debt / 50% Equity, and which one is most appropriate for 100% Debt?

Think about the potential upside and downside of each company and remember that, above all else, **lenders want to *avoid* losing money**.

The least risky company is the utility firm since consumers always need electricity, water, etc., and many of these firms have local monopolies. Utility companies are also predictable and have less growth potential than others. Therefore, this company is the best candidate for 100% Debt.

The railroad company is riskier than the utility company but less risky than the branded pharmaceutical company because it's subject to market forces, and its freight pricing and volume can shift dramatically based on the economy.

However, it's still *relatively* predictable because you can look at past economic cycles to forecast downturns. So, the railroad company is the best candidate for 50% Debt / 50% Equity.

The branded pharmaceutical company is incredibly risky because its products are protected by patents, which expire over time, and it's dependent on finding new drugs to replace older ones that have lost patent protection.

On the other hand, there's also a huge amount of upside if the company discovers a drug that cures cancer. So, this company the best candidate for 100% Equity.

Side Note: Many branded pharmaceutical companies also issue Convertible Bonds for the same reason, especially if they're already cash flow-positive.

12. In a credit model, how should the Downside cases differ from the Base and Upside cases?

Revenue growth and operating margins should be lower in the Downside cases, CapEx spending should be higher, and metrics like EBITDA and Free Cash Flow should be lower and more "unstable" than in the other cases.

To determine *how much lower* these metrics should be, you look at data from past downturns and data from poorly-performing companies in this industry.

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