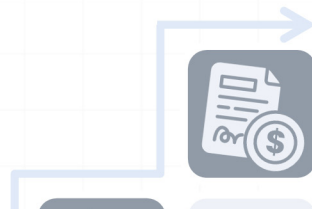




Debt: Forecasting, Coverage Ratios & Covenants

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Modeling Project Finance - Amortization Methods





Constant Principal

Principal repayment each year

So interest falls and the total payment falls over time

However at the beginning of the project operations the project **doesn't generate most of the cash flows in the beginning** – however, that's when your payment is greatest

So **not suitable** for project finance



Constant Installment

Similar to a **fixed rate mortgage**

Interest and portion of principal

Not great if any unpredictability in the forecast cash flows and **want to keep your DSCR**

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Loan Amortization Methods In Project Finance

More Flexibility In Structured Deals

Design the repayments around the **cash generation of the business**

Tailor Made Method

	A	B	C	D	E	F	G	H	I
1	Bank forecast	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9		
2	ULFCF - sponsor forecast	30.0	33.0	36.0	38.0	39.0	40.0		
3	ULFCF - bank forecast	24.0	26.4	28.8	30.4	31.2	32.0		
4	% haircut	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%		
5	Cash flows to repay loan	19.2	21.1	23.0	24.3	25.0	25.6	=G3*(1-G4)	
6									
7	Beginning balance	100.0	85.8	69.0	49.4	27.5	3.9	=F10	
8	Interest @ 5%	5.0	4.3	3.4	2.5	1.4	0.2	=G7*5%	
9	Cash payment	(19.2)	(21.1)	(23.0)	(24.3)	(25.0)	(4.1)	=MIN(G5,G7+G8)	
10	Ending balance	85.8	69.0	49.4	27.5	3.9	0.0	=SUM(G7:G9)	

Repayments are designed around the cash flow forecast for the business

Based on a '**bank forecast**' set of assumptions

Cash Sweep

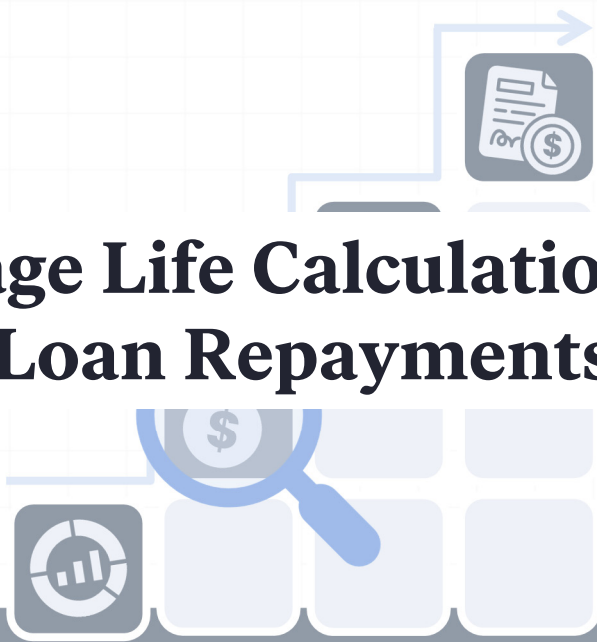
	A	B	C	D	E	F	G	H	I
1	Bank forecast	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9		
2	ULFCF - sponsor forecast	30.0	33.0	36.0	38.0	39.0	40.0		
3	DSCR	1.6	1.6	1.6	1.6	1.6	1.6		
4	Cash flows to repay loan	18.8	20.6	22.5	23.8	24.4	25.0	=G2/G3	
5									
6	Beginning balance	100.0	86.3	69.9	50.9	29.7	6.8	=F9	
7	Interest @ 5%	5.0	4.3	3.5	2.5	1.5	0.3	=G6*5%	
8	Cash payment	(18.8)	(20.6)	(22.5)	(23.8)	(24.4)	(7.2)	=MIN(G4,G6+G7)	
9	Ending balance	86.3	69.9	50.9	29.7	6.8	0.0	=SUM(G6:G8)	

Interest and repayment of the loan must be covered **1.6 times** by the available cash flow

Cash flow available to repay loan = 30m / 1.6 = **18.8m**

18.8m = **5m paid in interest**

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Average Life Calculations for Loan Repayments



Average life calculations



Syndication process



Sell loans

(Different **repayment structures**)



Repayment patterns



Cash flow

Every project finance transaction, the loans will have a **slightly different maturity**

	A	B	C	D	E	F	G	H
1		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	
2	Beginning balance		100.0	100.0	100.0	100.0	100.0	
3	Repayment		0.0	0.0	0.0	0.0	(100.0)	
4	Ending balance	100.0	100.0	100.0	100.0	100.0	0.0	
5	Interest % 5%		5.0	5.0	5.0	5.0	5.0	
6								
7	Weight		1.0	2.0	3.0	4.0	5.0	
8	Repayment		0.0	0.0	0.0	0.0	100.0	=G3
9	Multiply through		0.0	0.0	0.0	0.0	500.0	=G7*G8
10	Sum	500.0	=SUM(C9:G9)					
11	Divide by loan	5.0	=B10/B4		=average life			

	A	B	C	D	E	F	G	H
13	Loan 3 - staggered repayment							
14		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	
15	Beginning balance		100.0	95.0	85.0	65.0	40.0	
16	Repayment		(5.0)	(10.0)	(20.0)	(25.0)	(40.0)	
17	Ending balance	100.0	95.0	85.0	65.0	40.0	0.0	
18	Interest % 5%		5.0	4.8	4.3	3.3	2.0	
19								
20	Weight		1.0	2.0	3.0	4.0	5.0	
21	Repayment		5.0	10.0	20.0	25.0	40.0	=G16
22	Multiply through		5.0	20.0	60.0	100.0	200.0	=G20*G21
23	Sum	385.0	=SUM(C22:G22)					
24	Divide by loan	3.9	=B23/B17		=average life			

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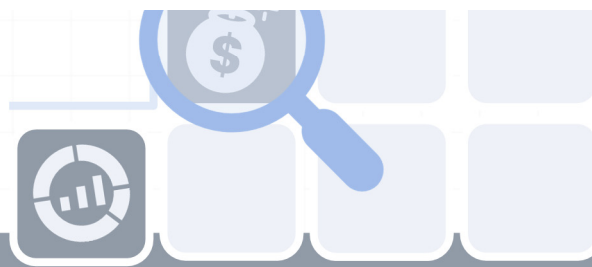
	A	B	C	D	E	F	G	H
1		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	
2	Beginning balance		100.0	100.0	100.0	100.0	100.0	
3	Repayment		0.0	0.0	0.0	0.0	(100.0)	
4	Ending balance	100.0	100.0	100.0	100.0	100.0	0.0	
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22	Multiply through		5.0	20.0	60.0	100.0	200.0	=G20*G21
23	Sum	385.0	=SUM(C22:G22)					
24	Divide by loan	3.9	=B23/B17		=average life			

Comparing these **two loans**Total maturity is **five years**First loan **slightly higher** than
the **second loan****Risk is lower**FINANCIALEDGE⁷



Unlevered Free Cash Flow



Unlevered Free Cash Flow



	EBITDA	Earnings before interest, taxes, and D&A
-	Tax Expense	Tax on pretax profit
-	Capex	Investment in PP&E
-/+	Change in OWC	Cash used by investment in OWC
=	Unlevered Free Cash Flow	Cash flow produced by operations



Coverage Ratios



Inserted into the loan documentation



Debt Service Coverage Ratio (DSCR)

Compare the **unlevered free cash flow** to interest and principal

Cushion between amount of **money available** and **money needed**

Minimum **accepted level agreed** by creditors – maybe higher the more risky the project

Loan Life Coverage Ratio (LLCR)

Point in **time measure** – summary value

Net present value of cash flow available for debt service

+

Available cash in the cash reserve

Total outstanding debt in the **given time**

Only if **higher than 1** will the loan be able to be repaid

Coverage Ratios Examples

	A	B	C	D	E	F	G	H
1		Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	
2	Unlevered free cash flows	50.0	110.0	120.0	125.0	130.0	140.0	
3	Interest	(30.0)	(28.0)	(25.0)	(20.0)	(15.0)	(10.0)	
4	Principal repayment	(5.0)	(40.0)	(50.0)	(60.0)	(70.0)	(80.0)	
5	Total debt service	(35.0)	(68.0)	(75.0)	(80.0)	(85.0)	(90.0)	=SUM(G3:G4)
6	Debt service coverage ratio	1.4	1.6	1.6	1.6	1.5	1.6	=G2/-G5

1 The bank may require repayments to be made giving a **fixed debt service coverage ratio**

2 Covenants might be set around **debt service coverage ratios**

	A	B	C	D	E	F	G	H
10		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
11	Unlevered free cash flows	50.0	110.0	120.0	125.0	130.0	140.0	
12	Interest	(12.5)	(12.3)	(10.3)	(7.8)	(4.8)	(0.8)	
13	Principal repayment	(5.0)	(40.0)	(50.0)	(60.0)	(80.0)	(15.0)	
14	Total debt service	(17.5)	(52.3)	(60.3)	(67.8)	(84.8)	(15.8)	
15	Interest rate	5.0%						
16	Present value of free cash flows	560.2	=NPV(B15,C11:H11)					
17	Total loan amount	250.0	=-SUM(C13:H13)					
18	Loan life coverage ratio	2.2						

1 You can calculate the **loan life coverage ratio** for each year

2 Divide by the **outstanding loan**

3 Use the **remaining cashflows** over the loan life

A graphic featuring a magnifying glass over a dollar sign icon, a bar chart icon, and a document with a dollar sign icon, all set against a grid background.

Security



SECURITY OVERVIEW

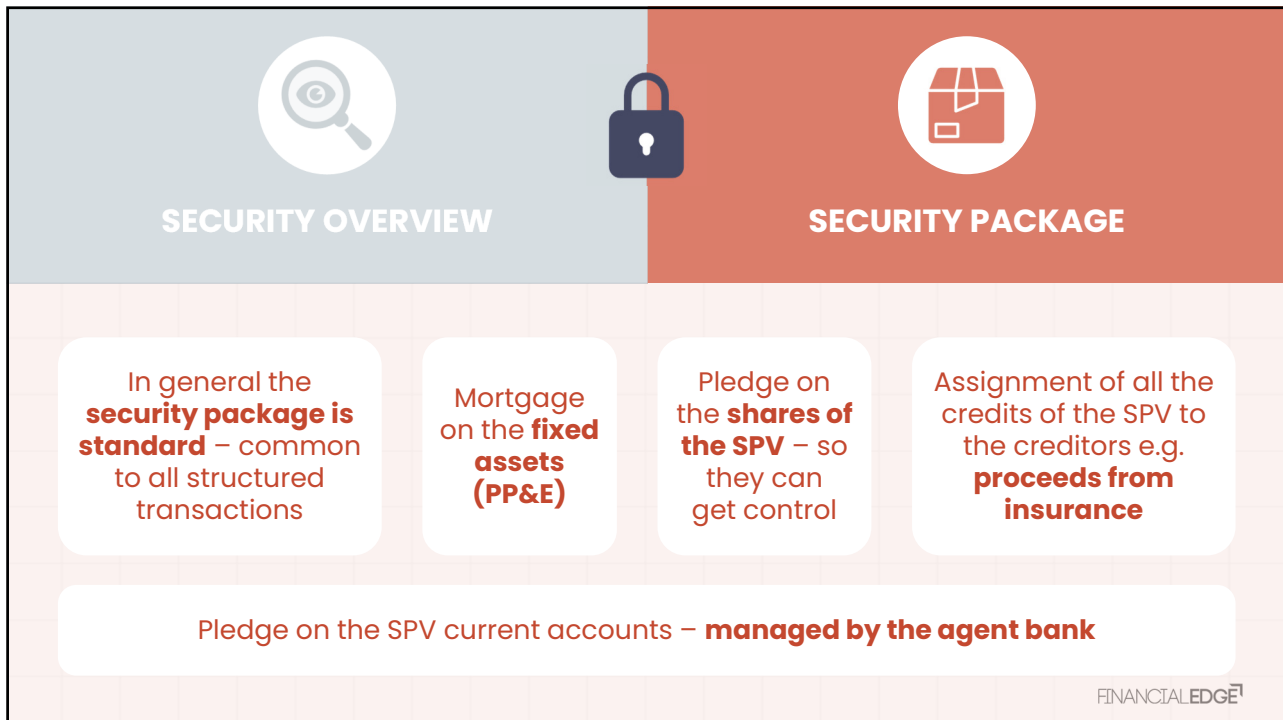


SECURITY PACKAGE

Lenders have **claim on the cash flows of the SPV** – so it's primarily cash flow based lending

However, all assets given to the SPV are **claimed by the creditors** – so no unsecured creditors

However, getting assets in project finance is difficult as they are so specific, so **collateral is of secondary importance** – don't rely on it to get repaid



Covenants: any **additional obligation** other than paying interest and principal. **They include:**

✓ Positive covenants – **must do** something

✗ Negative covenants – **must not** do something

\$ Financial covenants – e.g. **coverage ratios**



Security helps **protect against unexpected events**



Helps monitor the **behaviour of the borrower** – What they want and **don't want the SPV to do**, and also maintain performance

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Covenant Examples



Positive Covenants

Must maintain **minimum level of inventories**

Keep regular book keeping

Technical advisor can **inspect the site** whenever asked

Negative Covenants

Can't merge with another firm without **permission from creditors**

Cannot sell assets

Can't give to other creditors the same security as the existing creditors

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Covenant Breach

Breaking a Covenant

Breaking covenant = **technical default**

Remember technical default is **not insolvent**

For example technical advisor **could not access the site** – but project could be performing well

Default should **trigger three potential actions**

Covenant Breach

Any existing **credit lines are cancelled**



Creditors accelerate the loan – it becomes **immediately payable**

Can ask for the **repayment of the loan** at any time

When a Covenant is Broken



Materiality test by agent bank



Materiality test by agent bank





Materiality test by agent bank



Does it create a problem to the creditors?

If not it **does not** make sense to
accelerate the loan if not material



Materiality test by agent bank



If not material

Then **pay a waiver fee** to amend the covenant



Materiality test by agent bank



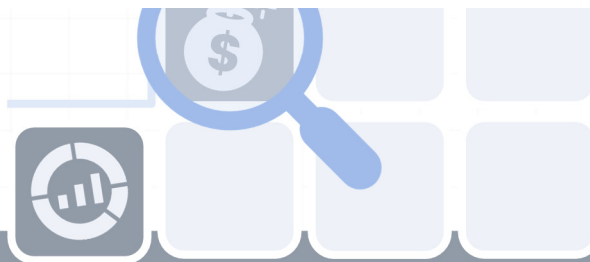
If material – creditors will call the default, and **accelerate the loan and demand repayment** – project is not performing

Security package comes into force and **creditors take over and decide** what to do. Shareholders are side-lined

Negotiation between **shareholders** and **creditors** before covenant breach – if creditors are notified ahead of actual breach

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DSCR in a Covenant Breach



? What happens when the **debt service coverage ratio is broken?**

Say have set a **minimum DSCR of 1.3x**, have to meet **1x** otherwise **bankrupt**

What can banks do to **mitigate this level of risk?**

1**2****3****4**FINANCIALEDGE⁷

? What happens when the **debt service coverage ratio is broken?**

Say have set a **minimum DSCR of 1.3x**, have to meet **1x** otherwise **bankrupt**

What can banks do to **mitigate this level of risk?**

1

Review the **expected DSCR** over the future years based on the forecast

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? What happens when the **debt service coverage ratio is broken?**

Say have set a **minimum DSCR of 1.3x**, have to meet **1x** otherwise **bankrupt**

What can banks do to **mitigate this level of risk?**

2

Is the **situation material** – probably not?
Also due to the headroom there is some additional cash

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? What happens when the **debt service coverage ratio is broken?**

Say have set a **minimum DSCR of 1.3x**, have to meet **1x** otherwise **bankrupt**

What can banks do to **mitigate this level of risk?**

3

They can require the **spare cash in the year** which the covenant is broken is **paid to the creditors**, so the loan is paid early

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? What happens when the **debt service coverage ratio is broken?**

Say have set a **minimum DSCR of 1.3x**, have to meet **1x** otherwise **bankrupt**

What can banks do to **mitigate this level of risk?**

4

So debt service ratio in **covenant breach = 1** and will **help the DSCR** in the future years

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