Financial Modelling

Callable Bonds

Callable Bonds

means the interest rates for callable bonds are more than there counterparts as there is always a risk that issuer pays back the amount borrowed and reissue a lower interest rate bond when the interest rates decrease in the market.

A callable bond is a debt security that can be redeemed early by the issuer before its maturity at the issuer's discretion.

A callable bond allows companies to pay off their debt early and benefit from favorable interest rate drops.

A callable bond benefits the issuer, and so investors of these bonds are compensated with a more attractive interest rate than on otherwise similar non-callable bonds.

How a Callable Bond Works

A callable bond is a debt instrument.

The issuer reserves the right to return the investor's principal and stop interest payments before the bond's maturity date.

The bond's offering will specify the terms of when the company may recall the note.

A callable bond is typically called at a value that is slightly above the par value of the debt.

face value

The earlier in a bond's life span that it is called, the higher its call value will be.

say year 1 call value 1050, year 3 call value 1030 etc.

Example of a Callable Bond

means after 3 years simply pay 10.2M dollar and nd borrow 10.2 M money at 4% IR instead of 6%

Let's say ABC (ABCL) decides to borrow $10 million in the bond market and issues a 6% coupon bond with a maturity date in five years.

The issue can call the bond after 3 years from the date of issuance with the $102 premium to par.

The company pays its bondholders 6% x $10 million or $600,000 in interest payments annually.

The restructure of the debts will be reducing its annual interest payment to 4% x $10.2 million or $408,000.

Imp : But now they need to borrow $10.2 million to repay the bondholders at the $102 call price.
So the new interest payment = 4% × $10.2 million = $408,000 per year.

Callable Bonds and Interest Rate

- If market interest rates decline after a corporation floats a bond, the company can issue new debt, receiving a lower interest rate than the original callable bond. The company uses the proceeds from the second, lower-rate issue to pay off the earlier callable bond by exercising the call feature. As a result, the company has refinanced its debt by paying off the higher-yielding callable bonds with the newly-issued debt at a lower interest rate.

- Paying down debt early by exercising callable bonds saves a company interest expense and prevents the company from being put in financial difficulties in the long term if economic or financial conditions worsen.

Valuation of Callable Bond

Par Value 1000

Coupon Rate 7.5%

Can be called after 2 years at 1005

		7.50%	1075
	7.20%		
7%		7.10%	1075
	6.80%		
		6.75%	1075
0	1	2	3

the callable bond's price is capped at the call price (e.g., ₹1075), even if the theoretical value of the bond is higher at certain points in time.

		7.50%	1075
	7.20%		
7%		7.10%	1075
	6.80%		
		6.75%	1075
0	1	2	3

without callable

	(75+1001.87)/(1+0.072)	1000.00
	1004.54	1001.87
1012.21	1008.07	1003.73
	1011.59	1005.38
	(75+1005.38)/(1+0.068)	1007.03
0	1	2

Valuation of Callable Bond

		7.50%	1075
	7.20%		
7%		7.10%	1075
	6.80%		
		6.75%	1075
0	1	2	3

		1000.00
	1004.54	1001.87
1011.77	1007.59	1003.73
	1010.64	1004.37
		1005.00
0	1	2

with callable

Valuation of Callable Bond

Valuation of Callable Bond

Nominal Spread=YTM of Bond–Yield of Benchmark (Risk-Free Bond)

Call Price = Bond Price – Bond Price with Option

imp

here = 1012.21 - 1011.77

Nominal Spread = Yield of the Bond – Yield of Comparable Bond

= 7.03% - 6% = 2.03%

price of bond = sum(C/(1+rt+Z)^t)

Z Spread = The % amt added to treasury curve (spot rate curve) to match the market price.

Option Adjusted Spread (OAS)

The option-adjusted spread (OAS) measures the difference in yield between a bond with an embedded option, such as an MBS or callables, with the yield on Treasuries. means govt bonds (non callable)

Embedded options are provisions included with some fixed-income securities that allow the investor or the issuer to do specific actions, such as calling back the issue.

Using historical data and volatility modeling, OAS considers how a bond's embedded option can change the future cash flows and thus the overall value of the bond.