equaliFi ACADEMY

CCRA™

CERTIFIED CREDIT RESEARCH ANALYST

Session 7- Credit Risk Model and Regulations(Part-2)

Call & Put Option…

- Call and put options are derivative investments, meaning their price movements are based on the price movements of another financial product, which is often called the *underlying*.

- A call option is bought if the trader expects the price of the underlying to *rise* within a certain time frame.

- A put option is bought if the trader expects the price of the underlying to *fall* within a certain time frame.

- Puts and calls can also be written/sold, which generates income but gives up certain rights to the buyer of the option

What is Strike Price of Call Option?

- The strike price is the predetermined price at which a call buyer can buy the underlying asset. For example, the buyer of a stock call option with a strike price of 10 can use the option to buy that stock at $10 before the option expires.

- Options expirations vary and can be short-term or long-term. It is worthwhile for the call buyer to exercise their option, and require the call writer/seller to sell them the stock at the strike price, only if the current price of the underlying is above the strike price. For example, if the stock is trading at $9 on the stock market, it is not worthwhile for the call option buyer to exercise their option to buy the stock at $10 then he will not earn any profit.

What does the Call buyer gets?

The call buyer has the right to buy a stock at the strike price for a set amount of time. For that right, the call buyer pays a premium. If the price of the underlying moves above the strike price, the option will be worth money (will have intrinsic value). The buyer can sell the option for a profit (this is what most call buyers do) or exercise the option at expiry (receive the shares)

What does the Call Seller Gets?

The call writer/seller receives the premium. Writing call options is a way to generate income. However, the income from writing a call option is limited to the premium, while a call buyer has theoretically unlimited profit potential

Call Options Cost…

One stock call option contract actually represents 100 shares of the underlying stock. Stock call prices are typically quoted per share. Therefore, to calculate how much buying the contract will cost, take the price of the option and multiply it by 100

What is Put Option?

A put is an options contract that gives the buyer the right to *sell* the underlying asset at a set price at any time up to the expiration date. Buyers of European-style options may exercise the option—sell the underlying—only on the expiration date.

What is Strike Price of Put Option?

- The strike price is the predetermined price at which a put buyer can sell the underlying asset. For example, the buyer of a stock put option with a strike price of $10 can use the option to sell that stock at $10 before the option expires.

- It is worthwhile for the put buyer to exercise their option, and require the put writer/seller to buy the stock from them at the strike price, only if the current price of the underlying is below the strike price. For example, if the stock is trading at $11 on the stock market, it is not worthwhile for the put option buyer to exercise their option to sell the stock at $10 because they will incur loss of $1 per share.

What does the Put Buyer Gets?

The put buyer has the right to sell a stock at the strike price for a set amount of time. For that right, the put buyer pays a premium. If the price of the underlying moves below the strike price, the option will be worth money (will have intrinsic value). The buyer can sell the option for a profit (what most put buyers do) or exercise the option at expiry (sell the shares)

What does the Put Seller Get?

The put seller/writer receives the premium. Writing put options is a way to generate income. However, the income from writing a put option is limited to the premium, while a put buyer's maximum profit potential occurs if the stock goes to zero.

Put Options Cost…

Put contracts represent 100 shares of the underlying stock, just like call option contracts. To find the price of the contract, multiply the underlying's share price by 100.

Black Scholes Model….

The Black Scholes model, also known as the Black-Scholes-Merton (BSM) model, is a mathematical model for pricing an options contract. In particular, the model estimates the variation over time of financial instruments. It assumes these instruments (such as stocks or futures) will have a lognormal distribution of prices. Using this assumption and factoring in other important variables, the equation derives the price of a call option.

Assumptions of Black Scholes Model

- The option is European and can only be exercised at expiration
- No dividends are paid out during the life of the option.
- Markets are efficient (i.e., market movements cannot be predicted).
- There are no transaction costs in buying the option
- The risk-free rate and volatility of the underlying are known and constant.
- The returns on the underlying are normally distributed.

Value of a Company-Equity, Debt & Call Option…

- One way to conceptualize a company's value is to think of it in terms of debt holders and equity holders. **Debt holders** have loaned a company money in exchange for interest payments and the eventual return of principal at a specified time. These are also known as bondholders. The company is indebted to debt holders and eventually must pay them back. These debt holders have a claim on the cash flows of the company.

- What's left over after the company fulfills their debt obligations belongs to the equity holders.

Value of a Company-Equity, Debt & Call Option…(Contd.)..

- Let's say XYZ Corp is a company whose stock trades publicly with both debt holders and equity holders. Today, the total value of the company is $100 million. XYZ Corp also has $75 million in face value debt set to mature in 5 years with zero coupon.

- **Equity can be thought of as a call option on the company's assets with a strike equal to the face value of the debt.** This is true because of the concept of limited liability. **Limited liability** reduces the risk of loss for equity investors if the firm is valued less than the value of the outstanding debt.

- *NB: **Limited liability** is where a person's financial **liability** is **limited** to a fixed sum, most commonly the value of a person's investment in a company or partnership. If a company with **limited liability** is sued, then the claimants are suing the company, not its owners or investors.*

Value of a Company-Equity, Debt & Call Option…(Contd.)..

- On liquidation of XYZ Corp, the most value that equity holders could possibly lose in XYZ Corp is equity they currently have. Limited liability protects the equity holders from having negative equity.

- **Call options** give the option holder the right to purchase value of the total debt which, in this case, equals $75 million. Therefore here the Strike Rate to be valued based on $75 million (Face Value of Debt).

Thank You