BEYOND OPTIONS: A PRACTICAL GUIDE TO DERIVATIVES, BONDS & RISK IN FINANCE

Finance made easy for everyone

A field guide for Finance students and junior analysts

Nitya Jignasu

What you'll learn:

- ✓ How forwards, futures, swaps & options work
- ✓ How bonds link to derivatives through YTM, credit spreads, and callable features.
- ✓ Real-world hedging & speculation examples you'll see on the job
- ✓ Key risks and controls every analyst tracks
- ✓ A quick checklist for evaluating any derivative trade

This mini-guide breaks down what a derivative is, why it matters, and where these contracts are traded. You'll explore the four key contracts used across markets: forwards, futures, swaps, and options.

Each section includes simple, real-world examples that show how these instruments are used to *manage risk* or *take positions*. You'll also pick up core terms like strike, margin, and expiry so that you can follow the conversation on a trading desk, in class, or during interviews with clarity.

Disclaimer: This article is for educational purposes only and reflects my personal understanding of the concepts. It is not intended as financial advice. Please do your own research and consult a professional advisor before making investment decisions.

WHAT ARE DERIVATIVES?

In finance, not everything you analyze has a value of its own. Some instruments exist to track, hedge against, or profit from the movement of another asset. These are called derivatives.

Derivatives are financial contracts whose value is based on the price of another asset known as an underlying asset.

- The underlying asset could be a stock, bond, commodity, interest rate, or even another derivative.

Derivative values depend on the changes in the prices of the underlying asset, which is the primary instrument.

Derivatives are highly leveraged instruments, which increases their potential for risks and rewards.

EXAMPLE:

- An airline uses crude oil futures to lock in fuel prices six months in advance. If oil prices rise, the futures profit will offset the higher fuel cost, thus protecting the company's margins.
- A trader buys a call option on Tesla stock, betting that the price will rise. If Tesla's stock rises above the strike price, the trader will profit without buying the stock outright.

WHY DO THEY MATTER?

Derivatives play a crucial role in modern financial markets and corporate finance. They are important as they enable participants to manage risks, discover prices, and capitalize on market opportunities.

1. **Hedging - Managing Risks**

   Hedging is reducing the risks of unfavourable price movement in assets you own or plan to buy/sell by taking an opposite position in a derivative. The goal of hedging is to reduce risks, not to make a profit.

   - Airlines are highly affected by fuel price volatility. When they enter an oil futures contract, they lock in fuel costs months in advance. If in the future, the oil price spikes, the gain on the future will offset the higher cost of fuel.

   - An MNC expects future payments in Euros, but reporting it in U.S dollars may face currency risks. Hence, by entering into a forward contract to sell euros, the company fixes the exchange rate today. In doing so, it ensures that revenue is in dollars irrespective of future currency fluctuations.

2. **Speculation - Taking a risk to earn profit**

   Speculation is taking on more risks with the expectation of gaining profit from the price fluctuations. Speculators buy/sell derivatives based on their predictions of future price movements. It is a high risk - high reward trade.

   - A speculator expecting oil prices to drop would sell the crude oil futures. If prices drop, they buy back the futures cheaper and pocket the difference

   - An investor bullish on gold prices might buy call options. If gold rises above the strike price, the investor profits significantly while risking only the option premium.

WHERE ARE THEY TRADED?

Derivatives trade in two main markets:

- **Exchange-Traded Derivatives (ETDs):**
  Listed on organized exchanges like the Chicago Mercantile Exchange (CME) and Intercontinental Exchange (ICE). These markets offer standardized contracts, transparency, and high liquidity.

- **Over-the-Counter (OTC) Derivatives:**
  Forwards and swaps are usually privately negotiated between two parties. They allow customized contract terms (useful for corporate hedging) but involve higher counterparty risk and less regulation compared to exchanges.

TYPES OF DERIVATIVES

1. **Forwards:**
    - A forward contract is a private agreement between two parties to buy/sell an asset at a specific price on a future date.
    - The forward contract is customized and traded over the counter (OTC), i.e., there is no standardization, and it is traded privately.
    - It is mainly used for currencies and interest rates.

HOW THEY WORK:

Two parties agree today on the price and quantity of an asset to be exchanged at a future date. No money changes hands when the contract is signed.

On the settlement date, the buyer pays the agreed price (forward price), and the seller delivers the asset or settles the difference in cash. Because forwards are private and customized, the terms, such as quantity, price, and maturity date, are negotiated directly between the two parties.

Example: A forward contract to buy 500 shares of Target at $20 per share, four months from today.

- Target's shares are the underlying assets for the forward contract.
- The $20 per share is the forward price in the contract.
- The settlement date (date of maturity) is the date when the shares will be exchanged for cash in the future.
- 500 shares is the contract size of the forward contract.

2. Futures:

- Futures are standardized contracts traded on regulated exchanges that obligate two parties to buy or sell an underlying asset at a predetermined price on a specific future date.
- Traders post an initial margin, a good-faith deposit, and maintain a maintenance margin to ensure daily losses can be covered.
- Mark-to-Market: Profits and losses are settled daily by the exchange, reducing counterparty risk.

HOW THEY WORK

To open a position, a trader deposits the initial margin. Each trading day, the exchange adjusts the margin account based on price movements (mark-to-market).If the account balance falls below the maintenance margin, additional funds must be deposited. Contracts are either cash-settled or physically delivered at expiry.

Example

A bakery purchases wheat futures at $600 per bushel to hedge against rising flour costs. If wheat prices increase to $650, the $50 gain per bushel in the futures position offsets the higher spot-market cost of wheat.

3. **Swaps:**

- A swap is an over-the-counter (OTC) agreement between two parties to exchange cash flows, most commonly to manage interest rate or currency risk.
- The interest rate swap, where one party pays a fixed rate and receives a floating rate, or vice versa.

TYPES OF DERIVATIVES

HOW THEY WORK

The parties agree on a notional principal amount. At each payment date, they exchange only the net difference between the fixed and floating interest payments.

Example

A company with floating-rate debt anticipates rising interest rates. It enters into an interest rate swap to pay a fixed 5% and receive floating LIBOR, locking in predictable borrowing costs.

In swaps, the floating leg was often linked to LIBOR, a benchmark rate banks used to charge each other for short-term loans. Today, it's being replaced by rates like SOFR, but you'll still see LIBOR in many existing contracts.

TYPES OF DERIVATIVES

- **Options:** An option is a contract giving the buyer the right, but not the obligation, to buy (call option) or sell (put option) an underlying asset at a fixed price (strike price) on or before a specific date (expiry).
- Premium is defined as the cost paid for the right to buy/sell.
- The buyer pays a premium for this right, which represents the maximum potential loss.

HOW THEY WORK

If the market price moves favourably, the option is exercised; if not, it expires worthless. Call options gain value as the underlying price rises, while put options gain value as it falls.

Example

You buy a call option on Apple stock with a strike price of $180, expiring in one month, for a $5 premium:

- If Apple trades at $200 at expiry, you exercise the call, buy at $180, and sell at $200, earning $20 per share (net profit: $15 after premium).

- If Apple remains below $180, the option expires worthless, and your loss is limited to the $5 premium.

Call VS Payoff at Expiry

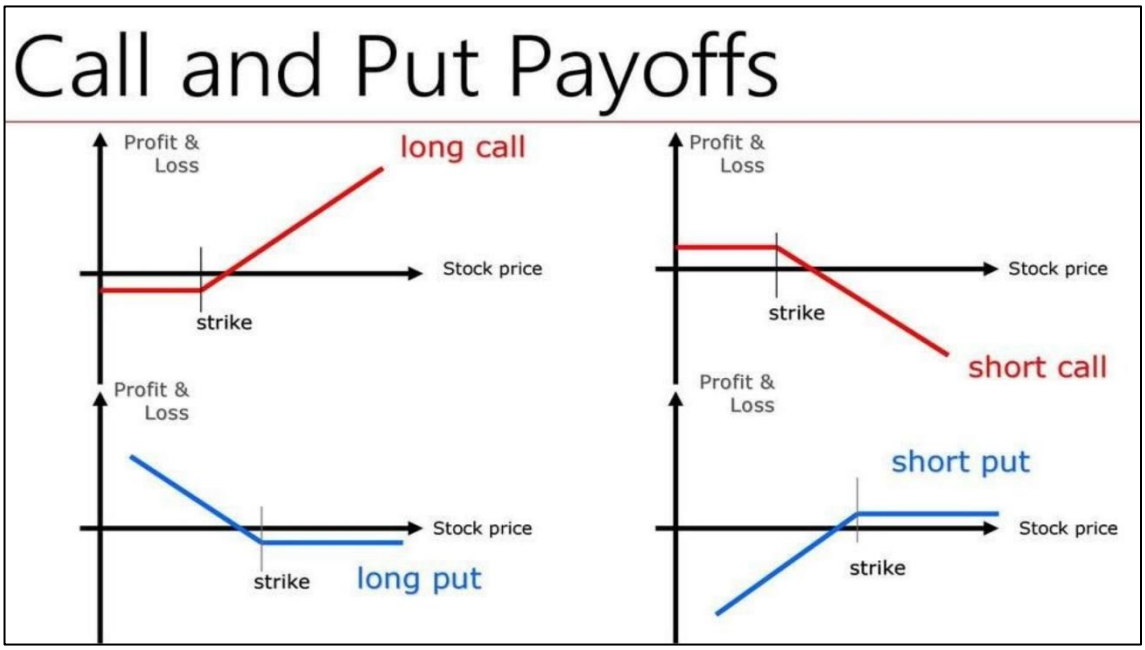

Figure: Call and Put Payoffs

The long call and long put show how option buyers have limited loss equal to the premium paid and unlimited (call) or significant (put) profit potential as prices move favorably.

The short call and short put represent the seller's payoff, where gains are limited to the premium received, but losses can be substantial if the market moves against them.

WHERE BONDS MEET DERIVATIVES

Bonds and derivatives are more connected than they seem. Many bonds have features that act like built-in derivatives, and the way bonds are priced often uses the same principles as derivative valuation.

A callable bond, for example, includes an embedded call option. Credit spreads drive the pricing of credit default swaps, and yield calculations rely on discounting future cash flows, just like forwards or swaps.

For analysts, this connection matters because changes in interest rates, credit risk, or volatility affect both bonds and derivatives in similar ways. That's why portfolio managers and risk teams often evaluate them together when managing risk or finding trading opportunities.

1. **Yield to maturity (YTM):**

   A callable bond gives the issuer the right to repay (or "call") the bond before maturity, usually when interest rates drop.

Why it's relevant

A callable bond embeds a call option that benefits the issuer. If rates fall, the issuer can refinance at lower costs, just as an options trader exercises a profitable call.

Application

Issuers save on borrowing costs, while investors demand higher yields to compensate for the risk of losing a high-yield bond when it's called.

2. Credit Spreads

The credit spread is the yield difference between a corporate bond and a government bond of similar maturity. It reflects the market's view of the issuer's credit risk.

Why it's relevant

Credit spreads are a key input in pricing credit derivatives like credit default swaps (CDS). A widening spread signals rising default risk, similar to how option prices rise with volatility.

Application

Traders monitor credit spreads to assess company health or hedge default risk.

A narrowing spread often signals improving credit conditions.

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RISKS AND CONTROLS

Derivatives are powerful tools, but they require constant monitoring. Here are the main risks and how analysts typically control them:

- **Leverage Risk**

  Risk: Small price changes can cause large gains or losses due to margin.

  Control: Set position limits, use stop-loss orders, and regularly stress-test exposure.

- **Liquidity Risk**

  Risk: Difficulty exiting positions quickly in volatile markets.

  Control: Trade standardized, exchange-traded contracts when possible; monitor bid-ask spreads.

- **Basis Risk**

  Risk: The hedge does not perfectly track the underlying asset's price movement.

  Control: Match the underlying asset and derivative as closely as possible in terms of maturity, quality, and contract size.

- **Counterparty Risk**

  Risk: One party may default on an OTC forward or swap.

  Control: Use clearinghouses when available, demand collateral, and trade with creditworthy counterparties.

RISKS AND CONTROLS

- **Systemic Risk**

  Risk: Large interconnected derivative positions can trigger wider financial instability.

  Control: Diversify positions, limit leverage, and follow regulatory capital and reporting requirements.

ANALYST CHECKLIST

Before you enter into any derivative position, ask yourself these questions:

- ❖ What is the underlying asset?
- ❖ Is the position for hedging or speculation?
- ❖ What is the payoff structure? (linear for futures, non-linear for options)
- ❖ What are the margin or premium requirements?
- ❖ What risks am I exposed to, and are they acceptable?
- ❖ What happens if the market moves sharply against the position?

CONCLUSION

Derivatives and bonds may look complex, but they're simply tools to manage risk, lock in costs, or take calculated market positions. Understanding how forwards, futures, swaps, and options work, along with key bond concepts like YTM, credit spreads, and callable features, gives you a clearer view of how professionals price and manage risk every day.

For students and junior analysts, mastering these basics is more than theory; it's how you connect classroom concepts to real market decisions.