Creator : SHAILEE R. DESAI

QUANTITATIVE ANALYSIS

DATA SCIENCE INSTITUTE

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Put Options

- A put option is a contract giving the owner the right, but not the obligation, to sell–or sell short–a specified amount of an underlying security at a pre-determined price within a specified time frame.

- Put options are available on a wide range of assets, including stocks, indexes, commodities, and currencies.

- Put option prices are impacted by changes in the price of the underlying asset, the option strike price, time decay, interest rates, and volatility.

- Put options increase in value as the underlying asset falls in price, as volatility of the underlying asset price increases, and as interest rates decline.

- They lose value as the underlying asset increases in price, as volatility of the underlying asset price decreases, as interest rates rise, and as the time to expiration nears.

- Put options can be in, at, or out of the money.

- **In the money** means the underlying asset price is below the put strike price.
- **Out of the money** means the underlying price is above the strike price.
- **At the money** means the underlying price and the strike price are the same.

Call Options

- *The buyer of the call option has the right, but not the obligation to buy an agreed quantity of a particular commodity or financial instrument (the underlying) from the seller of the option at a certain time (the expiration date) for a certain price (the strike price). The seller (or "writer") is obligated to sell the commodity or financial instrument should the buyer so decide. The buyer pays a fee (called a premium) for this right*

- Call options are often used for three primary purposes. These are income generation, speculation, and tax management.

- Call options can be in, at, or out of the money.

- **In the money** means the underlying asset price is above the call strike price.
- **Out of the money** means the underlying price is below the strike price.
- **At the money** means the underlying price and the strike price are the same.

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

Vanilla Options

- A vanilla option is a financial instrument that gives the holder the right, but not the obligation, to buy or sell an underlying asset at a predetermined price within a given timeframe. A vanilla option is a call option or put option that has no special or unusual features

- Vanilla options are used by individuals, companies, and institutional investors to hedge their exposure in a particular asset or to speculate on the price movement of a financial instrument.

- **In case of a vanilla option, options traders need not necessarily wait until the date of maturity to “close.”**

Non-Standard Options

- These are options that don't have the standard terms of an options contract, namely 100 shares as the underlying asset. They are normally created as a result of a specific event such as a merger, acquisition, spin-off, extraordinary dividend or stock split. As a result of the changing circumstances, the contract is adjusted to be equitable to both the option buyer and seller by equating the new underlying asset(s) of equal value as the owner of 100 shares. The *Depository Trust Company* (DTC) determines how the shares will trade pre-event while the *Options Clearing Corp. (OCC)* decides how these changes will be reflected in the options. Each situation is unique and therefore *non-standard*. This makes them difficult to understand and therefore risky to most investors

Gap Options

- A type of binary options whose stated strike price is different from its payoff strike. That is, there is a gap between the price at which the option can be exercised and the price at which it would produce a payoff to the holder. The strike price determines the size of the option’s payoff, while a gap amount determines whether the payoff would be made or not.

- The gap option is also known as a pay-later option.

- A **gap** call **option** has a nonzero payoff (which may be positive or negative) if the final stock price exceeds the trigger price.
  A **gap** put **option** has a nonzero payoff if the final stock price is less than the trigger price.

- Gaps are spaces on a chart that emerge when the price of the financial instrument significantly changes with little or no trading in-between.

- Gaps occur unexpectedly as the perceived value of the investment changes, due to underlying fundamental or technical factors.

- Gaps are classified as breakaway, exhaustion, common, or continuation, based on when they occur in a price pattern and what they signal.

Forward Start Options

- A forward start option is an exotic option similar to a vanilla option, except the forward start option doesn't activate until some time in the future and the strike price is unknown when the option is bought.

- All parameters are set for the forward option at initiation (not activation) except for the strike price. The strike price is unknown at initiation but is typically set to be at or near the money when the option activates.

- Once the option activates and its strike is set, the option is valued in the same way as a vanilla option.

- A series of forward start options is called a ratchet or cliquet.

Cliquet Options

- A cliquet, also called a "ratchet option," is a series of at-the-money (ATM) options, either puts or calls, where each successive option becomes active when the previous one expires.
- The total premium and the exact reset dates are known at the time of transacting a cliquet.
- Cliquet holders can opt to receive their payout when each option expires or wait until the entire series plays out to receive the sum of all payouts at maturity.
- Example
- A three-year cliquet with reset dates each year would have three payoffs. The first would pay off at the end of the first year and has the same payoff as a normal ATM option.
- The second year's payoff has the same payoff as a one-year option, but with the strike price equal to the stock price at the end of the first year.
- The third year's payoff has the same payoff as a one-year option, but with the strike price equal to the stock price at the end of the second year.

Compound Options

- A compound option is an option to receive another option as the underlying.

- The underlying is the second option, while the initial option is called the overlying.

- Compound options can involve two strike prices and two expirations dates. Also, if the compound option is exercised, two premiums.

- They are available for any combination of calls and puts. For example, a put where the underlying is a call option or a call where the underlying is a put option.

- Each pair has an abbreviation:

- Call on a put - CoP (CaPut)
- Call on a call - CoC (CaCall)
- Put on a put - PoP
- Put on a call - PoC

Chooser Options

- A chooser option lets the buyer decide if the option will be exercised as a call or put.
- Due to its greater flexibility, a chooser option will be more expensive than a comparable vanilla option.
- Chooser options are typically European style, and have one strike price and one expiration date regardless of whether the option is exercised as a call or put.

Barrier Options

- Barrier options are a type of option in which payout depends on whether the option has reached or exceeded a pre-determined barrier price.

- Barrier options offer cheaper premiums as compared to standard options and are also used to hedge positions.

- There are primarily two types of barrier options: knock-out and knock-in barrier options.
- **Knock-in barrier option**

- A knock-in barrier option is a barrier option where the associated rights commence once an underlying asset reaches a certain price. It means the holder can exercise the option only at and after the moment the price hits a particular level in the open market.

- If the knock-in price level is hit anytime during the life of the barrier option's contract, then it becomes a vanilla option and is priced appropriately. If the knock-in price level is never reached, the knock-in barrier option expires worthless.

- Knock-in barrier options are further classified into up-and-in or down-and-in options. In an up-and-in barrier option, the option contract starts only when the price of the underlying asset exceeds the predetermined price barrier. Conversely, if it is a down-and-in barrier option, it turns valid as the underlying asset value drops below the initially set barrier price.

Barrier Options

- **2. Knock-out barrier option**
- As far as knock-out barrier options are concerned, their validity ceases when the underlying asset hits a barrier during the time horizon of the contract. Knock-out barrier options can also be further decomposed into up-and-out or down-and-out options.
- An **up-and-out option** stops existing when the underlying security moves above the barrier that was set above the initial price of the underlying security.
- A **down-and-out option** stops existing when the underlying security moves below the barrier that was set below the initial price of the underlying security. If an asset underlying the barrier option strikes the barrier anytime during the option's life, the option is terminated or knocked out.

Binary Options

- Binary options are based on a yes or no proposition and come with either a payout of a fixed amount or nothing at all.
- These options come with the possibility of capped risk or capped potential and are traded on the Nadex.
- Bid and ask prices are set by traders themselves as they assess whether the probability set forth is true or not.

Lookback Options

- Also known as a hindsight option, a lookback option allows the holder the advantage of knowing history when determining when to exercise their option. This type of option reduces uncertainties associated with the timing of market entry and reduces the chances the option will expire worthlessly.

- Lookback options are exotic options that allow a buyer to minimize regret.

- Lookback options are only available Over The Counter (OTC) and not on any of the major exchanges.

- These options are expensive to establish and the potential profits are often nullified by the costs.

Shout Options

- A shout option is an exotic option contract that allows the holder to lock in intrinsic value at defined intervals while maintaining the right to continue participating in gains without a loss of locked-in monies. The option buyer "shouts" at the option writer to lock in the gain, yet the contract still remains open. The shout guarantees a minimum of profit, even if the intrinsic value decreases after the shout. If the option increases in value after the shout, the option buyer can still participate in that.

- A shout option allows the buyer to lock in the intrinsic value of an option by "shouting" at the writer to do so.

- Shout options are exotic options, and therefore their terms can be negotiated.

- Shout options are more expensive than standard options because of their flexibility to lock in profit while still participating in future profit.

Asian Options

- An **Asian option** (or *average value* option) is a special type of option contract. For Asian options the payoff is determined by the average underlying price over some pre-set period of time. This is different from the case of the usual European option and American option, where the payoff of the option contract depends on the price of the underlying instrument at exercise; Asian options are thus one of the basic forms of exotic options. There are two types of Asian options: fixed strike, where averaging price is used in place of underlying price; and fixed price, where averaging price is used in place of strike.

- One advantage of Asian options is that these reduce the risk of market manipulation of the underlying instrument at maturity. Another advantage of Asian options involves the relative cost of Asian options compared to European or American options. Because of the averaging feature, Asian options reduce the volatility inherent in the option; therefore, Asian options are typically cheaper than European or American options. This can be an advantage for corporations that are subject to the Financial Accounting Standards Board revised Statement No. 123, which required that corporations expense employee stock options.

Basket Options

- A basket option is a type of financial derivative where the underlying asset is a group, or basket, of commodities, securities, or currencies. As with other options, a basket option gives the holder the right, but not the obligation, to buy or sell the basket at a specific price, on or before a certain date.
- A basket option is an option where the underlying is a basket or group of any asset desired.
- Basket options trade OTC, and are therefore customized based on the buyer's and seller's needs.
- Basket options reduce trading fees, since it is one transaction instead of having to take individual trades on every position in the basket.
- The downside of the basket option is that there is limited liquidity for such options, so getting out before expiry may require additional offsetting transactions.

Bermuda Options

- A Bermuda option is a type of exotic options contract that can only be exercised on predetermined dates, often on one day each month.

- A Bermuda option can be exercised early, but only on a set of specific dates before its expiration.

- These exercise dates are often set at one-month increments.

- Premiums for Bermuda options are typically lower than those of American options, which can be exercised any time before expiry.

- **Pros :**
- Premiums for Bermuda options are typically lower than those of American options.

- Bermuda options allow investors to exercise the option on specific dates before expiry.

- **Cons :**
- Premiums for Bermuda options are more expensive than European options.

- The early exercise feature doesn't guarantee that it will be the most advantageous time to exercise.

Extendible Options

- An option that has, in addition to the right of exercise on the underlying, an additional right to extend its maturity date. In other words, this option can be extended by its buyer or seller who may choose, at the expiration date, to extend the life of the option by a specified period of time.

- Extendible options are generally classified as holder-extendible options (buyer-extendible options) and writer-extendible options (seller-extendible option). As the name implies, a holder-extendible option allows the holder to extended the contract at his own discretion. However, the holder must pay the seller an additional premium upon exercising the right to extend. For writer-extendible options, the writer has the right to extend the option as he deems appropriate. The writer does not pay the holder any extra amount, or waiver any portion of the premium, in order to extend the option.

- Predictably, the option will be extended only if it is out of the money, as there is little value in extending the option if it is already in the money. Extendible options come in two forms: extendible calls and extendible puts.

Spread Options

- A spread option is a type of option that derives its value from the difference, or spread, between the prices of two or more assets. Other than the unique type of underlying asset—the spread—these options act similarly to any other type of vanilla option.
- A spread option functions as a vanilla option but the underlying is a price spread rather than a single price.
- The price spread used may be the spread between spot and futures prices (the basis), between interest rates, or between currencies, among others.
- Spread options typically trade over-the-counter (OTC).
- Note that a spread option is *not* the same as an options spread. The latter is a strategy typically involving two or more options on the same, single underlying asset.

Range Options

- A range option is a type of binary option which brokers offer for use in trading. If a trader invests in a range option, they should indicate a set range in which they believe the asset price will fluctuate within up to the moment when the option expires. If the trader's forecast is correct, they can receive up to 100% of initially invested funds as profit.

- Mountain range options are a family of exotic options based on multiple underlying securities.
- They combine numerous underlying assets into one option and have the features of basket and range options.

- Prices are based on multiple variables—notably the correlations between the individual securities in the basket.

- Altiplano, Annapurna, and Himalayan options are types of mountain range options.

Broker/Dealer

- A broker-dealer (B-D) is a person or firm in the business of buying and selling securities for its own account or on behalf of its customers. The term broker-dealer is used in U.S. securities regulation parlance to describe stock brokerages because most of them act as both agents and principals.
- A brokerage acts as a broker (or agent) when it executes orders on behalf of its clients, whereas it acts as a dealer, or principal when it trades for its own account.

- A broker-dealer is a financial entity that is engaged with trading securities on behalf of clients, but which may also trade for itself.

- A broker-dealer is acting as a broker or agent when it executes orders on behalf of its clients, and as a dealer or principal when it trades for its own account.

- There are thousands of broker-dealers comprising two broad categories: a wirehouse, which sells its own products, or an independent broker-dealer, which sells products from outside sources.

Broker/Dealer

- Broker-dealers fulfill several important functions in the financial industry. These include providing investment advice to customers, supplying liquidity through market making activities, facilitating trading activities, publishing investment research and raising capital for companies.

- Broker-dealers range in size from small independent boutiques to large subsidiaries of giant commercial and investment banks.

- **Special Considerations**

- Broker-dealers that are tied directly to investment banking operations also engage in the underwriting of securities offerings. When a broker-dealer acts as an agent of the issuing company, either as a principal underwriter of the stock or bond offering, or as a member of the underwriting syndicate, they enter into a contractual arrangement, acting on a “firm commitment” with the issuer that obligates them to distribute a certain amount of the securities offered to the public in exchange for an underwriting fee.

Investment Dealer

- An Investment dealer is simply a term for a financial middleman. When you're a financial middleman, you could either act as a broker (and make trades of securities for clients and get a commission), or you could be a dealer (and trade securities on behalf of clients).

- Investment dealers are a general term for a firm that trades securities for its own account (broker) or on behalf of its customers (dealer). Investment dealers represent the sell side of the market, but can also at times be an institutional client of another investment dealer.

Crowdfunding Intermeidary

The FIN-FSA supervises crowdfunding intermediation in cases where a company raises either equity funding or debt funding for the purpose of financing business activity.
The FIN-FSA does not supervise mediation of peer-to-peer lending, reward- or donation-based crowdfunding or money collection.

- **Investment-based crowdfunding**

If funding is mediated to a company by offering financial instruments (e.g. shares or debt securities) as investment instruments, the activity constitutes **investment-based crowdfunding by financial instrument** and thereby provision of investment services subject to authorisation. To carry out such activity, the intermediary (e.g. party providing services through a crowdfunding platform) must have an authorisation as required by the Investment Services Act. As to whether the provision of investment services requires authorisation or not, it is of no consequence whether the financial instrument concerned is listed, i.e. subject to trading on a public trading venue.

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Securities Registration By Notification

- Registered securities are securities whose ownership is registered with an issuing company or agent, which maintains a ledger with the details.
- They are different from bearer securities, whose ownership lies with the bearer and which do not have a centralized ledger associated with them.

Securities Registration By Qualification

- Registration is the process by which a company files required documents with the SEC before an initial public offering (IPO).
- The two components that make up registration are the prospectus for investors and private filings for the SEC.
- Registration consists of significant detail regarding the offering, such as the price, date, financial statements, and legal problems.
- The term "registration" also refers to when a broker-dealer files the appropriate documentation to be legally able to sell securities.

Regulations D Offerings

- Under the federal securities laws, any offer or sale of a security must either be registered with the SEC or meet an exemption. Regulation D under the Securities Act provides a number of exemptions from the registration requirements, allowing some companies to offer and sell their securities without having to register the offering with the SEC. For more information about these exemptions, see our Fast Answers on Rules 504 and 506 of Regulation D.

Regulations CF Offerings

- Regulation Crowdfunding provides an exemption from the registration requirements for securities-based crowdfunding allowing companies to offer and sell up to $1.07 million of their securities without having to register the offering with the SEC.

- With Regulation Crowdfunding, the general public now has the opportunity to participate in the early capital raising activities of start-up and early-stage businesses. Anyone can invest in a Regulation Crowdfunding offering. Because of the risks involved with this type of investing, however, you are limited in how much you can invest during any 12-month period in these transactions. The limitation on how much you can invest depends on your net worth and annual income.

Stock Buyback

- A buyback, also known as a share repurchase, is when a company buys its own outstanding shares to reduce the number of shares available on the open market.

- The main reason is that its stock is undervalued, and the company wants to increase demand. Share buybacks reduce the number of shares in circulation, which can increase the share value and the earnings per share (EPS).

- To calculate earnings per share, the company's net income is divided by the number of shares in issue. By reducing the number of shares, EPS will naturally go up.

- For example, if the company's net income is $1 million and there are 10,000 shares outstanding, the EPS is $100. But if the company buys back a portion of its shares, the EPS will increase.

Private Market

- Private markets refer to investments in equity and debt of privately owned companies.
- Private equity is equity capital invested in private companies.
- Investors hope that by investing in private companies they can increase a company's value and sell their stake at a later stage through a trade sale, buyout, a recapitalization or through listing the company on public markets through an initial public offering (IPO).
- Private debt funds typically target the ownership of credit issued by private companies that either seek more flexible financing terms or are neglected by banks due to the complexity of transactions.
- Private equity investments represent the majority of investments in private markets.

Complete Market

- A complete market is one in which a derivative product can be artificially made from more basic instruments, such as cash and the underlying asset.
- This usually involves dynamically rebalancing a portfolio of the simpler instruments, according to some formula or algorithm, to replicate the more complicated product, the derivative.
- Obviously, an incomplete market is one in which you can't replicate the option with simpler instruments.

Incomplete Market

- An incomplete market is one where some of the necessary conditions for market formation exist, but not all of them.
- In the case of incomplete markets, some entrepreneurs may enter the market because profits are possible.
- However, the firms that do start-up will only satisfy a small proportion of potential demand. In these incomplete markets, total supply is insufficient to meet the needs of consumers.
- In such cases a market may form, but will fail to develop completely – in other words it is an incomplete.

Unified Managed Account

- A unified managed account (UMA) is a privately-managed investment account that can include a variety of investments, such as mutual funds, stock, and bonds.
- A UMA is typically rebalanced on a regular schedule, making sure the holdings reflect the correct balance of investments.
- It's a type of account often favored by high net worth investors who want a greater range of investments than what they can get with a separately managed account.
- UMA providers work with investors to design an integrated portfolio that includes multiple investments, provide support for tax planning, and create an effective rebalancing schedule.

Separately Managed Account

- Separately managed accounts, or SMAs, are portfolios of individual securities managed by an asset management firm. As an investor in an SMA, you directly own all securities in the account.
- **Transparency.** An SMA account allows you to see all of your holdings and transactions in real time as they happen, giving you insights into what is being traded rather than learning about those trades after the fact, as is the case with mutual funds.
- **Cost.** Although the minimum investment is higher than for most mutual funds, an SMA typically has fairly competitive fees, allowing you access to high-quality, active management at a discount.
- **Control.** You own a direct stake in the securities, and thus, any companies whose stocks are included in the SMA investment—an important consideration when it comes to voting rights, for example.
- **Customization.** SMAs are built specifically for each investor based on your personal investment goals and expectations, including the exclusion of any specified securities.

Turnkey Asset Management Program

- Turnkey asset management programs are fee-based platforms for asset managers, broker-dealers, CPAs, and other financial professionals.
- TAMPs can offer technology, back-office support, and tasks like investment research and asset allocation.
- Envestnet, SEI, AssetMark Financial, Brinker Capital, and Orion Portfolio Solutions are examples of TAMP providers.
- Turnkey asset management programs can help firms save time and allow them to focus more of their energy on finding new clients and servicing existing ones.
- By working with a third party, the user of a turnkey asset management program is giving up some control of some of the decision-making process, while also paying a fee for the service.

Fixed Time Trading

- Fixed Time Trade (FTT) is the most popular mode available on the Olymp Trade, Binomo, IQ Option platform. FTT mode allows you to make trades for a limited period of time and receive a fixed rate of return for a correct prediction about the changes of currency, stock, and other asset prices.

Normal Stock Trading

- A stock trader can be an individual who trades with their own money or a professional who trades on behalf of a financial company.
- Individual traders buy and sell through a brokerage or other agent, while institutional traders are often employed by investment firms.
- Traders provide liquidity to the markets and use a variety of methods and styles to define their strategies.
- Types of stock traders include day traders, swing traders, buy and hold traders, and momentum traders.

Accounts Receivable

- Accounts receivable is an asset account on the balance sheet that represents money due to a company in the short-term.
- Accounts receivables are created when a company lets a buyer purchase their goods or services on credit.
- Accounts payable is similar to accounts receivable, but instead of money to be received, it’s money owed.
- The strength of a company’s AR can be analyzed with the accounts receivable turnover ratio or days sales outstanding.
- A turnover ratio analysis can be completed to have an expectation of when the AR will actually be received.

Short Term Investments in gaap Accounting

- Short-term investments, also known as marketable securities or temporary investments, are financial investments that can easily be converted to cash, typically within 5 years.
- Short-term investments can also refer to the holdings a company owns but intends to sell within a year.
- Common examples of short-term investments include CDs, money market accounts, high-yield savings accounts, government bonds, and Treasury bills.
- Although short-term investments typically offer lower rates of return, they are highly liquid and give investors the flexibility to withdraw money quickly, if needed.
- Any increases or decreases in the value of a company's short-term investments are directly reflected on a company's income statement for the quarter.

Long Term Investments in gaap Accounting

- A long-term investment is an account a company plans to keep for at least a year such as stocks, bonds, real estate, and cash.
- The account appears on the asset side of a company's balance sheet.
- Long-term investors are generally willing to take on more risk for higher rewards.
- These are different from short-term investments, which are meant to be sold within a year.

Intangible assets gaap Accounting

- When the market ignores a company's historical financial performance, the market is often responding to "information asymmetry."
- The value of intangible assets—research and development (R&D), patents, copyrights, customer lists, and brand equity—represents a large part of that information gap.
- These invisible assets are the key drivers of shareholder value in the knowledge economy, but accounting rules do not acknowledge this shift in the valuation of companies.
- As a result, there is a serious disconnect between what happens in capital markets and what accounting systems reflect.

Cash Basis

- Cash basis refers to a major accounting method that recognizes revenues and expenses at the time cash is received or paid out.

- This contrasts accrual accounting, which recognizes income at the time the revenue is earned and records expenses when liabilities are incurred regardless of when cash is received or paid.

Accrual Basis

- Accruals are needed for any revenue earned or expense incurred, for which cash has not yet been exchanged.
- Accruals improve the quality of information on financial statements by adding useful information about short-term credit extended to customers and upcoming liabilities owed to lenders.
- Accruals and deferrals are the basis of the accrual method of accounting.
- Accruals are created via adjusting journal entries at the end of each accounting period.

Viatical Settlement

- A viatical settlement allows an owner of a life insurance policy to sell their policy at a discount from its face value to an investor in return for a one-time sum of cash.
- In a viatical settlement, the insured has a life expectancy of two years or less.
- The investor in a viatical settlement pays all future premiums left on the life insurance policy and becomes the sole beneficiary of the policy when the insured dies.
- A viatical settlement can be risky because the rate of return going into the investment is unknown and depends upon when the seller dies.
- A life settlement differs from a viatical settlement in that the insured seeking to sell their life insurance policy has an estimated life expectancy greater than two years.

Bear Market

- Bear markets occur when prices in a market decline by more than 20%, often accompanied by negative investor sentiment and declining economic prospects.[1]
- Bear markets can be cyclical or longer-term. The former lasts for several weeks or a couple of months and the latter can last for several years or even decades.
- Short selling, put options, and inverse ETFs are some of the ways in which investors can make money during a bear market as prices fall.

Phantom Stocks

- Phantom stock is incentive compensation or an employee benefit where the employee receives the benefit of owning a stock without the company giving them the stock in reality.

- It is an amount that the employer promises to pay to its employees in the near future.

Quadruple Witching

- Quadruple witching refers to a date on which derivatives of stock index futures, stock index options, stock options, and single stock futures expire simultaneously.

- While it may result in increased volume and arbitrage opportunities, quadruple witching does not necessarily translate to increased volatility in the markets.

- Quadruple witching days witness heavy trading volume, in part, due to the offsetting of existing futures and options contracts that are profitable.

The Witching Hour

- The witching hour is the last trading hour before options or other derivatives contracts expire.
- This period is often characterized by heavy volumes as traders rush to close out or roll positions.
- Double, triple, or quadruple witching refer to the simultaneous expiration of several different classes or series of options contracts.

Swap Derivative Contract

- Derivatives are securities that derive their value from an underlying asset or benchmark.
- Common derivatives include futures contracts, forwards, options, and swaps.
- Most derivatives are not traded on exchanges and are used by institutions to hedge risk or speculate on price changes in the underlying asset.
- Exchange-traded derivatives like futures or stock options are standardized and eliminate or reduce many of the risks of over-the-counter derivatives
- Derivatives are usually leveraged instruments, which increases their potential risks and rewards.

Leveraged Forex

- Leverage simply allows traders to control larger positions with a smaller amount of actual trading funds.
- In the case of 50:1 leverage (or 2% margin required), for example, $1 in a trading account can control a position worth $50. As a result, leveraged trading can be a "double-edged sword" in that both potential profits as well as potential losses are magnified according to the degree of leverage used.

Nextshares

- Shares of NextShares funds are normally bought and sold in the secondary market through a broker, and may not be individually purchased or redeemed from the fund. In the secondary market, buyers and sellers transact with each other, rather than with the fund.

- NextShares funds issue and redeem shares only in specified creation unit quantities in transactions by or through Authorized Participants. In such transactions, a fund issues and redeems shares in exchange for the basket of securities, other instruments and/or cash that the fund specifies each business day.

- By transacting in kind, a NextShares fund can lower its trading costs and enhance fund tax efficiency by avoiding forced sales of securities to meet redemptions.

- Redemptions may be effected partially or entirely in cash when in-kind delivery is not practicable or deemed not in the best interests of shareholders.

- A fund’s basket is not intended to be representative of the fund’s current portfolio positions and may vary significantly from current positions. As exchange-traded securities, NextShares can operate with low transfer agency expenses by utilizing the same highly efficient share processing system as used for exchange-listed stocks and ETFs.

Single Stock Futures

- A single stock future is a contract between two investors in which the buyer agrees to pay a specified price at a future point, at which point the seller will deliver the stock.
- Each single stock future contract is standardized and typically controls 100 shares of stock.
- Trading in single stock futures is often used as a strategy in hedging equity positions.
- Single stock futures also allow for greater leverage and short-taking than trading in the underlying stock.

Futures Options

- **Futures and options** are the major types of stock derivatives traded in a share market. These are contracts signed by two parties for trading a stock asset at a predetermined price on a later date. Such contracts try to hedge market risks involved in stock market trading by locking in the price beforehand.

- **Future and options in the share market** are contracts which derive their price from an underlying asset (known as underlying), such as shares, stock market indices, commodities, ETFs, and more. **Futures and options basics** provide individuals to reduce future risk with their investment through pre-determined prices. However, since a direction of price movements cannot be predicted, it can cause substantial profits or losses if a market prediction is inaccurate. Typically, individuals well versed with the operations of a stock market primarily participate in such trades.

Mean Squared Error

- In Statistics, Mean Square Error (MSE) is defined as Mean or Average of the square of the difference between actual and estimated values.

- MSE is used to check how close estimates or forecasts are to actual values. Lower the MSE, the closer is forecast to actual. This is used as a model evaluation measure for regression models and the lower value indicates a better fit.

Mean Absolute Percentage Error

- The **mean absolute percentage error** (MAPE) is a measure of how accurate a forecast system is. It measures this accuracy as a percentage, and can be calculated as the average absolute percent error for each time period minus actual values divided by actual values.

Root Mean Squared Error

- The Root Mean Squared Error (RMSE) is an important statistical calculation used to determine the difference between predicted values in a model and actual values from observations.

- If this difference is large the model is likely to be less accurate than if the difference is small; therefore, a modeler can calculate the RMSE and adjust other features until the RMSE is as small as possible to improve the model.

Moving Averages

- A moving average (MA) is a widely used technical indicator that smooths out price trends by filtering out the “noise” from random short-term price fluctuations.
- Moving averages can be constructed in several different ways, and employ different numbers of days for the averaging interval.
- The most common applications of moving averages are to identify trend direction and to determine support and resistance levels.
- When asset prices cross over their moving averages, it may generate a trading signal for technical traders.
- While moving averages are useful enough on their own, they also form the basis for other technical indicators such as the moving average convergence divergence (MACD).

Confidence Interval

- A confidence interval displays the probability that a parameter will fall between a pair of values around the mean.
- Confidence intervals measure the degree of uncertainty or certainty in a sampling method.
- They are most often constructed using confidence levels of 95% or 99%.

Mean Reversion

- Mean reversion, in finance, suggests that various phenomena of interest such as asset prices and volatility of returns eventually revert to their long-term average levels.

- The mean reversion theory has led to many investment strategies, from stock trading techniques to options pricing models.

- Mean reversion trading tries to capitalize on extreme changes in the price of a particular security, assuming that it will revert to its previous state.

Trend Following

- Trend following is a systematic investment strategy that seeks to profit from long-, medium- or short-term trends in markets based on the assumption that price trends tend to endure. The strategy does not attempt to predict the price of an asset but rather aims to buy an asset when its price is trending up and sell when its price is trending down.

- Trend following is typically the domain of **commodity trading advisers** (CTAs), who use proprietary quantitative models to determine when a trend has established itself and invest based on the assumption that the market price will continue to move in a specific direction over a given time period.

- As well as investing in trends over different timeframes, trend followers also use many different methodologies to calculate trends.

- One of the biggest risks of trend following is being caught out when an asset that previously gave a positive trending signal unexpectedly reverses. As a result, trend followers are often accused of exacerbating market selloffs in periods of volatility as they systematically unwind positions.

Statistical Arbitrage

- Statistical arbitrage is a group of trading strategies employing large, diverse portfolios that are traded on a very short-term basis.

- This type of trading strategy assigns stocks a desirability ranking and then constructs a portfolio to reduce risk as much as possible.

- Statistical arbitrage is heavily reliant on computer models and analysis and is known as one of the most rigorous approaches to investing.

Algorithmic Pattern Recognition

- Currently, there are mainly two kinds of stock price pattern recognition algorithms: the algorithm based on rule-matching and the algorithm based on template-matching.
- However, both of the two algorithms highly require the participation of domain experts, as well as their lacks of the learning ability.
- To solve these problems, the paper proposes a stock price pattern recognition approach based upon the artificial neural network.
- The experiment shows that the neural network can effectively learn the characteristics of the patterns, and accurately recognize the patterns.

Behavioral Bias Recognition

- Behavioral finance has revealed that real people do not behave like the rational actors predicted by mainstream theories and the efficient markets hypothesis.
- Real traders and investors tend to suffer from overconfidence, regret, attention deficits, and trend chasing -- each of which can lead to suboptimal decisions and eat away at returns.
- Here, we describe these four behavioral biases and provide some practical advice for how to avoid making these mistakes.

EFT Rule Trading

- An exchange traded fund (ETF) is a basket of securities that trade on an exchange, just like a stock.

- ETF share prices fluctuate all day as the ETF is bought and sold; this is different from mutual funds that only trade once a day after the market closes.

- ETFs can contain all types of investments including stocks, commodities, or bonds; some offer U.S. only holdings, while others are international.

- ETFs offer low expense ratios and fewer broker commissions than buying the stocks individually.

Alpha Model

- Alpha refers to excess returns earned on an investment above the benchmark return.
- Active portfolio managers seek to generate alpha in diversified portfolios, with diversification intended to eliminate unsystematic risk.
- Because alpha represents the performance of a portfolio relative to a benchmark, it is often considered to represent the value that a portfolio manager adds to or subtracts from a fund's return.
- Jensen’s alpha takes into consideration the capital asset pricing model (CAPM) and includes a risk-adjusted component in its calculation.

Risk Model

- Market risk, or systematic risk, affects the performance of the entire market simultaneously.
- Market risk cannot be eliminated through diversification.
- Specific risk, or unsystematic risk, involves the performance of a particular security and can be mitigated through diversification.
- Market risk may arise due to changes to interest rates, exchange rates, geopolitical events, or recessions.

Transaction Cost Model

- Transaction costs are the payments that banks and brokers receive from buyers and sellers for their roles.
- Transaction costs are one of the key determinants of net returns.
- Different asset classes have different ranges of transaction costs; investors should select assets with costs that are at the low end of the range for their types.

Portfolio Construction Model

- Portfolio construction is a process of selecting securities optimally by taking minimum risk to achieve maximum returns. The portfolio consists of various securities such as bonds, stocks, and money market instruments.
- When the investor is investing for a lifelong goal, the portfolio planning process never stops.With advance in time, there may be changes in the goals.
- Events such as job change, childbirth, divorce, death, or shrinking time horizons may require adjustments to their portfolio plans. As changes occur, or as market/economic conditions dictate, the portfolio planning process begins afresh.

Execution Model

- Execution refers to filling a buy or sell order in the market, subject to conditions placed on the order by the end client.
- There are several ways to execute a trade and they encompass manual as well as automated methods.
- Brokers are required by law to find the best possible means to execute a client's trade.