

## BRIQ Newsletter Glossary

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This glossary includes terms not explicitly covered in any documents related to the BRIQ Newsletter. We hope it is helpful for investment analysts or anyone seeking to improve their understanding of the investment world. The definitions are not exhaustive but simply introductory in nature. These terms were accumulated over multiple decades of teaching investments.

**Absolute VaR:** A value-at-risk statistic that is based on the distance from zero. See *Relative VaR*.

**Accounting Risk:** The risk of changes in accounting promulgations that adversely affect a firm's risk management strategies.

**Add-on rate:** An interest rate calculation method that adds interest on at the end of the period without any compounding.

**Adjusted price:** The instrument's price after adjusting for corporate actions, such as dividend payments, stock splits, and so forth.

**Annualize:** Process of converting periodic statistics into a per year equivalent, there are many different methods for annualization.

**Approximately Symmetric:** A skewness category where the skewness statistic lies between  $\pm 1/2$ .

**Arithmetic average:** A numerical calculation of the sum of values divided by the number of values, a measure of central location.

**American-Style Option:** The option buyer has the right to exercise the option at any time prior to and including the expiration date specified in the contract.

**Analyst:** A job title for entry-level quantitative support personnel.

**Analytic:** A solution methodology that relies on equations as opposed to numerical methods like trial-and-error, often the methodology is deployed in computer programs.

**Annualize:** Process of converting periodic statistics into a per year equivalent, there are many different methods for annualization.

**Approximately symmetric:** A skewness category where the skewness statistic lies between  $\pm 1/2$ .

**Arbitrage:** A trading strategy that provides at least the possibility of positive cash flow without any chance of negative cash flow and, hence, does not require any investment. Typically, arbitrage involves receiving monies today and having no subsequent liabilities.

**Arbitrageur:** A person who conducts arbitrage.

**Arbitrage Opportunity:** see *Arbitrage*.



**Arbitrage Pricing Model (APT):** An equilibrium asset pricing model based on multiple factors and many securities. APT is a misnomer—it should have been AVT for arbitrage valuation model. See *Price and Value*.

**Arbitrage Strategy:** A trading strategy based on seeking out and exploiting arbitrage opportunities.

**Arc:** The price path emanating from a *node* in a lattice. Part of discrete valuation models such as the *Binomial Option Valuation Model*.

**Arithmetic Average:** A numerical calculation of the sum of values divided by the number of values, a measure of central location.

**Asian Option:** The option payoff depends on some average value of the underlying instrument over some period before expiration.

**Ask or Ask Price:** The price offered by the seller of a contract. Contrast with *Bid Price*.

**Asset:** Anything that is valuable in exchange. Most derivative security's value is based on some underlying asset.

**Asset Arbitrage:** An arbitrage strategy that requires initially owning the underlying asset, for example, a strategy where a company manages its generation assets in a way to exploit market price opportunities.

**Asset-Liability Management (ALM):** The consideration of both the assets and the liabilities in the risk management process. Often involving the matching of assets with liabilities to lower the overall risk.

**Assets Under Management (AUM):** Some aggregation of dollar value of instruments that are managed by a particular entity, it is an important measure of an investment management company's profitability.

**Asset-Weighted Statistics:** See *Value-Weighted Statistics*.

**Assumptions:** Every financial model and calculation is based on assumptions, such as no taxes. Assumptions are more specific than presuppositions that tend to underlie entire financial markets.

**Asymmetric Instrument:** Derivatives instruments that can experience either large losses or large gains, but not both. Typically, there is a cost to enter, for example, options, caps, and floors.

**Asymmetric Hedge:** Hedging a risk with an asymmetric instrument.

**Asymmetric Risk:** A risk exposure that is truncated on one side. The firm may have unlimited downside risk but limited upside potential or the firm may have unlimited upside potential but limited downside risk.

**At-the-Money (ATM):** An option where the strike price is roughly equal to the current price of the underlying instrument.



**Attribution:** See *Performance Attribution*.

**Autocorrelation:** Standard regression models assume that the error terms are mutually independent. When this assumption fails, the error terms are said to be autocorrelated.

**Back Office:** The business division that handles trade confirmations, accounting, and other processes that support a trading operation.

**Backtesting:** An analytical process of validating a valuation model or risk measurement statistic by examining the results in the past.

**Backwardation:** Is said to occur when the long-term forward prices are higher than the short-term forward prices. Contrast with *Contango*.

**Balanced Fund:** A diversified portfolio comprised of both stocks and bonds, typically with a mixture of capital appreciation and cash flow.

**Barrier Option:** Contains a termination (knock-out) or initiation (knock-in) provision such that the option becomes worthless (knock-out) or potentially valuable (knock-in).

**Baseload:** The quantity of power that is required to be delivered in power-related derivative contracts.

**Baseload Swap:** Often within a structured product, it is a swap that affects baseload.

**Basis:** The price difference between similar instruments but different in one unique aspect, such as different geographic locations.

**Basis Option:** An option on a given basis.

**Basis Point:** One percent of one percent.

**Basis Risk:** The risk of change in the basis, for example, the risk that the spot price and forward price move in ways unexpected.

**Basis Spread:** The dollar value of a basis, where the basis is the difference in two instruments.

**Bear Market:** A market where the price is falling.

**Bear Call Spread:** a position in two call option contracts with the same expiration where one is short a low strike price call and long a high strike price call.

**Bear Put Spread:** a position in two put option contracts with the same expiration where one is long a high strike price put and short a low strike price put.

**Benchmark Tracking Risk:** A standard deviation of a vector of differences between an instrument's rate of return and its associated bogey.



**Bermuda-Style Option:** A general type of option for which the buyer had the right to exercise or strike the option on specific dates or during specific periods of time.

**Beta:** The slope coefficient of a linear regression measuring the sensitivity of one variable to another variable. For example, the rate of return on a given stock investment and the rate of return of a given stock index investment.

**Biblically Responsible Investor (BRI):** A person or entity seeking to invest in financial instruments that align with biblical principles.

**Bid or Bid Price:** The price one is willing to pay to enter of a contract. Contrast with *Ask Price*.

**Bid-Ask Spread:** The size of the difference between the bid and ask prices.

**Binomial Option Pricing Model:** See *Binomial Option Valuation Model*.

**Binomial Option Valuation Model (BOVM):** An option valuation model based on a binomial tree of the underlying instrument at each time step. The model can be designed to converge to a closed-form valuation model as the time step tends to zero. Also known as the binomial option pricing model, a misnomer.

**Binomial Tree:** A stochastic process used to model the underlying instrument's volatility that for each time step has two arcs emanating from each node. . Also see *Trees*.

**Black Option Pricing Model:** See *Black Option Valuation Model*.

**Black Option Valuation Model:** A variation of the Black-Scholes option valuation model where the underlying is the forward price. Also known as the Black option pricing model, a misnomer.

**Black-Scholes Option Pricing Model:** See *Black-Scholes-Merton Option Valuation Model*.

**Black-Scholes-Merton Option Valuation Model (BSMOVM):** An option valuation formula first published in two 1973 papers, one by Fisher Black and Myron Scholes and another one by Robert Merton. This model assumes the underlying follows a lognormal distribution and the volatility is constant.

**Black-Scholes-Merton Volatility:** See *Implied Volatility*, where the theoretical model is the Black-Scholes-Merton Option Valuation Model.

**Blend Fund:** A diversified stock portfolio including both growth and value stocks providing style diversification.

**Bogey:** A benchmark portfolio used to appraise performance.

**Bond:** A debt instrument, usually involving a borrower (lender) that receives (pays) funds initially and repays these funds plus interest in the future.



**Bond equivalent yield:** A constant discount rate used to value U. S. Treasury notes and bonds as well as other debt instruments.

**Book:** (1) “To book” implies accounting recognition of a transaction, (2) Often a portfolio of transactions categorized in a variety of ways, such as by trader or by product.

**Bootstrapping:** With simulation, the process of sampling historical observations to generate the estimated distribution.

**Breadth:** Measures the size of the limit orders at prices above and below the current price.

**Broker:** An individual or company that facilitates trading between entities, usually bears no risk in the transaction.

**Bucket:** A grouping of positions, for example, see *Strike Bucket* and *Time Bucket*.

**Bull Market:** A market where the price is rising.

**Bull Call Spread:** a position in two call option contracts with the same expiration where one is long a low strike price call and short a high strike price call.

**Bull Put Spread:** a position in two put option contracts with the same expiration where one is short a high strike price put and long a low strike price put.

**Business risk:** Those risks related to the firm’s strategic position within a particular industry.

**Calibration:** An analytical procedure usually used to align some data with some theoretical model. For example, the volatility parameter is found when the option price is known and a theoretical model selected.

**Call Option:** A contract where the owner has the right to purchase an instrument at the specified strike price on or before a specified date.

**Call Spread:** a position in two call option contracts with the same expiration, either long a low strike price call and short a high strike price call (bull call spread) or short a low strike price call and long a high strike price call (bear call spread).

**Cap:** A derivative contract or structured transaction that contains the equivalent of a portfolio of call option contracts that differ only by maturity dates. See *Caplet*.

**Capacity:** The upper limit on available generation volume; can be used to refer to a power plant or geographical region.

**Capacity Option:** An option to purchase or sell additional amounts of a product, such as power. The price of the additional amounts is not set until the option is exercised.



**Capital Asset Pricing Model (CAPM):** An equilibrium asset pricing model that assumes the only priced risk is the risk of the entire market. The expected return of a single asset or portfolio is comprised of the risk-free rate plus a market risk premium that varies depending upon the single asset's or portfolio's beta. This model would be better labeled the Capital Asset Valuation Model as it does not represent observed market information.

**Capital Asset Valuation Model:** See the *Capital Asset Pricing Model*.

**Capital Allocation:** The process of assigning equity capital across different divisions or risk categories within a firm.

**Capital Requirements:** The regulatory demand to maintain certain levels of equity capital based on the risk profile of the firm.

**Caplet:** A single option contract in a cap. See *Cap*.

**CAPM:** See *Capital Asset Pricing Model*.

**Capture ratio:** A technical measure of the performance of an instrument compared to its bogey focused on positive or negative moves in the bogey.

**Carry Arbitrage (CA):** An arbitrage strategy that typically is conducted by borrowing money, buying the underlying spot instrument, and selling the forward or futures contract.

**Cash Desk:** The trading division that is focused on short-term trades (daily, weekly, and perhaps balance-of-month). Contrast with the *Term Desk*.

**Cash Dividend:** Dollars paid from the company to shareholders as compensation for the use of their funds and provides a return on investment.

**Cash Flow-at-Risk (CFaR):** Measures the anticipated worst loss in terms of changes in cash flow over a stated time period under normal market conditions at a pre-specified confidence level.

**Cash Flow Risk:** Due to variation margin, collateral payments and collateral requirements, joint events of cash flow drain in the firm and cash flow drain related to trading operations.

**Cash Settlement:** A contract whose obligations are met in cash as opposed to delivery of the physical commodity. Contrast with *Physical Settlement*.

**Censored Likelihood Ratio Approach:** A methodology used in validating value-at-risk that exploits the uniform distribution of the cumulative distribution function as well as the useful properties of the normal distribution.

**Clearinghouse:** A legal entity typically affiliated with a trading exchange that stands as guarantor of the trader's contractual requirements.



**Closed Form Model:** In finance, refers to theoretical models that are relatively simple to calculate and does not require iterative techniques or numerically intensive calculations.

**Collar:** A combination of a long position in an option and a short position in another option. Typically, both the upside and downside risk exposures are limited when compared with owning the underlying instrument.

**Collateral:** Assets pledged to another counterparty or bank until contractual obligations are fulfilled.

**Commission Broker:** An individual or company that fosters bilateral trading by publishing market price indications and bringing counterparties together and is compensated only if transactions occur.

**Commodity:** Any economic item, often referred to as physical commodities, including agricultural products, mined materials, and energy products.

**Commodity Futures Trading Commission (CFTC):** Established in 1974 by the U.S. Congress to regulate futures trading and some options trading.

**Compound Option:** An option on an option. May take a variety of different forms such as a put option on a call option or a call option on a callable bond.

**Confidence Interval:** An interval estimate of a given point estimate. Provides a statement on the likelihood the estimate is reasonable.

**Confirmation:** Counterparties agree that a trade has been executed and agree with the contractual details.

**Contango:** Contango occurs when the futures price is *above* the unobservable expected future spot price. Alternatively, sometimes defined as an expression for describing when the long-term forward prices are lower than the short-term forward prices. Compare with *Normal Backwardation* and *Normal Markets*.

**Continuous Compounding:** An interest compounding method that assumes the continuous payment of benefits. Compare with *Discrete Compounding*.

**Continuous Hedging:** An active trading strategy used to mitigate some risk, requires constant attention to adjust the risk profile.

**Contract:** An instrument, specifically a binding legal obligation, such as an exchange-traded futures contract or an over-the-counter swap contract.

**Convenience Yield:** The potential value obtainable for owning a commodity or asset.

**Convexity:** With options, the change in option value when the underlying instrument increases does not equal the change in option value when the underlying instrument decreases.



**Copula:** Mathematical functions that join multivariate distributions to their corresponding univariate marginal distribution functions.

**Corporate Action:** A myriad of unique company decision from cash dividends, stock dividends, stock splits, mergers, spin-offs, and even in-kind dividends (for example, ski lift tickets in lieu of cash dividends).

**Correlation:** Measures of how strongly related two variables are. The range of the correlation coefficient is between  $-1$  and  $+1$  inclusive. In finance, the correlation is typically calculated using rates of returns rather than the prices themselves.

**Correlation Risk:** Risk that the estimated correlation is a poor proxy of the actual future correlation experienced.

**Cost-Plus-Return:** A procedure to determine the appropriate compensation for an activity based on the producer's cost. Contrast with *Mark-to-Market*.

**Cost of Carry:** The all-in cost of owning a commodity or instrument, including finance charges.

**Cost of Carry Arbitrage:** An arbitrage transaction involving the purchase of the underlying instrument.

**Cost of Carry Model:** An equilibrium valuation model that is justified by cost of carry arbitrage.

**Counterparty:** An entity (individual or company) that has entered a derivatives contract.

**Counterparty Risk:** The risk that a counterparty fails to honor their contractual obligations.

**Covariance:** A measure of how two variables move together, the average of the produce of the deviations from the mean.

**Covered Call Writing (CCW):** An option-based strategy where one is long the underlying instrument and short a call option, sets a ceiling on potential gains.

**Covered Position:** A portfolio that contains both the underlying instrument (long or short) that will be required if the option contract is exercised. For example, long the instrument and short the related call option.

**Crack-Spread Option:** A spread option based on crude oil and the related refined commodities.

**Credit-at-Risk (CaR):** Measures the anticipated worst loss in terms of mark-to-market changes in response to credit events over a stated time period under normal market conditions at a pre-specified confidence level.

**Credit Derivative:** Any derivative instrument whose payoff is tied in some fashion to credit exposure.





**Credit Enhancement:** Any procedure, such as posting collateral that reduces the likelihood of default or the adverse consequences of default.

**Credit Exposure:** The current or potential dollar exposure to a counterparty.

**Credit Rating:** Provided by various companies, a credit rating is an assessment of a particular borrower's ability to pay a debt.

**Credit Reserves:** Funds set aside for expected credit losses that provide essential liquidity during market stress events.

**Credit Risk:** The risk of a counterparty failing to meet their contractual obligations.

**Cumulative annualized return (CAR):** A calculation seeking the gains or losses from a one dollar investment in the instrument.

**Cumulative Default Rate:** The probability of default at any time up to a stated point in the future.

**Cumulative Distribution Function (CDF):** Measures the probability of observing a value of a variable at or below a specified value.

**Curve Risk:** The risk that prices do not move as anticipated. For example, the forward curve does not shift parallel.

**Data Capture:** The process of recording price or other data within a database, usually daily.

**Data Mining:** The exercise of analyzing large amounts of data for the purpose of determining the appropriate valuation model or risk measurement. May result in faulty conclusions because history will not be repeated.

**Data Warehouse:** Organized and stored data in an integrated fashion to support quantitative analysis and historical study.

**Day-Ahead Market:** The spot market where delivery is the next day, subject to some adjustments for holidays and weekends.

**Day Trade:** A transaction that is entered and exited within one day.

**Deal:** A general term used to identify a set of obligations, such as a structure transaction, an over-the-counter trade, or an exchange-traded contract.

**Deal Capture:** Recording trades in the computer system when they occur.

**Declaration date:** This is the first day that the company announces the amount and timing of the next dividend. Any unique attributes regarding this dividend will be provided in this announcement.



**Decomposition of VaR:** The process of analyzing value-at-risk in order to identify the impact of individual variables, risks, or contracts.

**Deep-In-the-Money:** Occurs when the option is very valuable, for call options, the underlying instrument's value is way above the strike price and for puts, the underlying instrument's value is way below the strike price. See *In-the-Money*.

**Default Risk:** See *Credit Risk*.

**Default Value-at-Risk:** See *Credit-at-Risk*.

**Delivery:** The physical transfer of a commodity based on the terms of a derivatives contract.

**Delivery Expiration Date:** For derivatives contracts that require physical settlement (as opposed to cash settlement), it is the date that such physical assets are delivered. In energy markets, the delivery expiration date may occur before the actual physical delivery.

**Delta:** A measure of the change in a position for a small change in the underlying instrument price.

**Delta-Gamma VaR:** A value-at-risk estimate where non-linear positions are approximated using delta and gamma and the underlying risk variables are assumed to be normally distributed.

**Delta Hedging:** A hedging methodology based on the estimated delta, often with the goal of a delta-neutral portfolio.

**Delta Neutral:** A position or portfolio where the delta is approximately zero.

**Delta-Normal VaR:** A value-at-risk estimate where non-linear positions are approximated using delta and the underlying risk variables are assumed to be normally distributed.

**Delta VaR:** See *Delta-Normal VaR*.

**Demand Swing Option:** A swing option where one of the counterparties exercise strategy is based on the need for power. Contrast with *Price Swing Option*.

**Density Evaluation Methods:** A category of methods for assessing whether the value-at-risk system is generating appropriate numbers. This category assesses whether the estimated distribution was reasonable.

**Depth:** Measures the number of sell limit orders above the current price and the number of buy limit orders below the current price.

**Derivative Instrument:** A contract where the value is derived from some other underlying position or index.

**Deterministic:** A variable with a known behavior or outcome about which there is no uncertainty. See *Stochastic*.



**Deterministic Process:** A process that is not random. For example, the drift component of a stochastic process is typically deterministic. Contrast with *Stochastic Process*.

**Disaster Risk:** The general risk of catastrophes such as earthquakes or hurricanes.

**Discount Factor:** The present value of one dollar.

**Discounting Rate:** Informally, the interest rate that forms the basis for discount factors. Formally, the rate quotation convention for U.S. Treasury bills.

**Discrete Compounding:** An interest compounding method that assumes the discrete payment of benefits. Compare with *Continuous Compounding*.

**Distribution:** See *Cumulative Distribution Function*.

**Distribution Date:** Companies typically need a period of time to audit the holders of record to be sure who is and is not eligible to receive benefits that will be granted.

**Diversifiable Risk:** See *Specific Risk*.

**Diversification:** The process of taking multiple positions for the purpose of lowering the overall risk exposure.

**Dividend:** Cash or stock payments made by the company to shareholders.

**Dollar Delta:** A measure of the amount a portfolio will change for a small change in the underlying risk factor.

**Dollar Profit:** Expressed in currency units, the change in the value of an investment of some period of time.

**Dollar Return:** See *Dollar Profit*.

**Downside Capture Annualized Return (UCAR):** A measure that incorporates only the instrument's total return only when the bogey total return is less than one. See *Upside Capture Annualized Return*.

**Downside Capture Ratio (UCR):** A measure that incorporates only the total return only when the bogey total return is less than one divided by the bogey's total return only when the bogey total return is less than one. See *Upside Capture Ratio*.

**Downside deviation (DD):** The standard deviation of the minimum of zero or the actual returns, a measure of downside risk.

**Drift:** The mean price change in a stochastic process.



**Early Exercise:** An American-style option buyer exercises the option prior to the contract's final expiration date.

**Earnings-at-Risk (*EAR*):** Measures the worst earnings loss over a stated time period under normal market conditions at a pre-specified confidence level.

**Economic Capital:** The total capital required to support unexpected losses.

**Efficient Market Theory (*EMT*):** Market prices include all relevant information, and a pricing function exists to process this information into a single market price.

**End User:** The final consumer of a commodity.

**Enterprise Risk Management (*ERM*):** The process of aggregating many of the firm's risk for the purpose of actively managing to total basket of risks.

**Equal-Weighted Statistics:** Statistics are aggregated by computing a simple average of funds in a particular category over a stated period. See *Value-Weighted Statistics*.

**Equilibrium Model:** A theoretical model for asset price behavior, useful in identifying the appropriate risk factors to consider.

**Equilibrium Price:** The theoretical price around which prices may oscillate. In some valuation models, it represents the long-term price to which short-term prices revert.

**Equity:** The residual owner of an entity, typically a company. See *Stock*.

**Estimation Error:** The difference between the actual value and the estimated value. When valuing complex positions, results in mark-to-model risk.

**European-Style Option:** The option buyer has the right to exercise the option only on the expiration date of the contract.

**Excess Kurtosis:** Typically associated with the overall concentration of probability in the center of the distribution.

**Excessive Loss Test:** The procedure is to specify the probability density function underlying the value-at-risk estimate and use this distribution to infer losses to expect when value-at-risk events occur.

**Excess Return:** The rate of return difference between a financial instrument and its bogey.

**Excess Sector Allocation Weight:** The difference between the sector allocation weights of a financial instrument and its bogey.

**Excess Sector Return:** The difference between the sector return of a financial instrument and its bogey.



**Ex-Distribution Date:** The next trading day after the split distribution date when shares trade on a fully diluted basis.

**Ex-Dividend Date:** The first trading day when purchasing the share will not entitle you to receipt of this dividend.

**Exercise:** The act of the option buyer to require the option seller to deliver within the requirements of the option contract.

**Exercise Price:** See *Strike Price*.

**Exotic:** A contract that is atypical and usually complex.

**Expected Value:** The probability-weighted sum of possible values, a measure of central value.

**Expiration:** The last date that one can legally perform some action. For example, option expiration is the last date the option buyer can extract value from the option.

**Exponentially Weighted Moving Average (EWMA):** A methodology for estimating sample statistics where observations are weighted differently and the admissible window of observations moves over time.

**Ex-Record Date:** This is the first trading day when purchasing the share will not entitle you to receipt of additional shares from the company due to a split.

**Extrapolation Risk:** The risk that the forward curve or other set of variables does not extend as estimated.

**Factor Analysis:** A statistical procedure for identifying relevant risk factors.

**Factor Models:** Theoretical models that seek to explain an instrument's risk. The goal is typically to identify the smallest number of risk factors.

**FASB:** See *Financial Accounting Standards Board*.

**FASB 133:** A rule numbered 133 by the Financial Accounting Standards Board affecting derivatives trading.

**Fiduciary:** A person in a trust position with another person(s), who is held to the highest legal standard to seek the beneficiary's best interest.

**Financial Engineering (FE):** According to the International Association of Financial Engineers, financial engineering is "the development and creative application of financial technology to solve financial problems and exploit financial opportunities."

**Financial Risk:** All the risks encountered when a firm borrows money.



**Financial Accounting Standards Board (FASB):** A professional board responsible for establishing financial reporting standards in the United States.

**Financial Instrument:** a phrase used to denote the highest level of financial taxonomy that is measurable. See *Instrument*.

**Firm Contract:** A power derivatives contract that requires both delivery and payment. Contrast with *Non-Firm Contract*.

**First Moment:** A measure of the central location of a distribution. See *Expected Value*.

**Fixed-for-Floating Swap:** One counterparty pays a fixed price while the other counterparty pays a varying amount depending on the current spot price (may also require physical delivery of a product).

**Fixed Income Fund:** An unfortunate label given to debt-related portfolios, even if they invest in floating rate instruments.

**Floor:** A derivative contract or structured transaction that contains the equivalent of a portfolio of put option contracts that differ only by maturity dates. See *Floorlet*.

**Floorlet:** A single put option contract in a floor. See *Floor*.

**Forecast Horizon:** The length of time forming the basis of a forecast, for example, one day or one year.

**Forward Contract:** A fixed-price contract where typically no premium is paid up front and is usually traded in the over-the-counter market.

**Forward Price:** The instrument price that one contracts for now for delivery (and payment) at some specified time later.

**Forward Price Curve:** A mapping of the relationship between forward prices that differ only by contract maturity date.

**Forward Curve Risk:** The risk that the forward price curve does not behave in a manner anticipated.

**Forward Price:** The instrument price that one contracts for now for delivery (and payment) at some specified time later.

**Fraud Risk:** The risk of loss based on deliberate deceit or material misrepresentation in pursuit of unlawful gain.

**Frequency Distribution:** The mapping of the probability of various outcomes with those outcomes, forming the basis for value-at-risk calculations.

**Frictionless Markets:** See *Perfect Markets*.



**Front/Middle/Back Office Model:** An organizational framework that delegates trading and related support functions into three separate functional areas. See *Front Office* (trading), *Middle Office* (analytical support), and *Back Office* (administrative support).

**Front Office:** The division of the firm that houses the trading operations, including sales and marketing, trading for clients and the firm, and managing the trading books. Part of the *Front/Middle/Back Office* model.

**Funding Liquidity Risk:** See *Cash Flow Risk*.

**Fungible:** One instrument can be replaced by another instrument.

**Futures Contract:** A marketable forward contract traded on an exchange.

**Futures Commission Merchant (FCM):** A broker qualified to execute futures and futures options contracts.

**Futures Option:** An option on a futures contract.

**Futures Price:** The quoted price forming the basis of a futures contract. The price one is obligated to buy or sell the commodity in the future.

**Gambling:** The act of committing something valuable typically for a specific purpose but a has significant chance of partial or total loss. For example, betting on a particular sports team qualifies as gambling.

**Gamma:** A measure of the change in a position's delta for a small change in the underlying instrument price.

**Gamma-Neutral Portfolio:** A portfolio that has a gamma equal to zero. The optionality risk is removed for small changes in the underlying instrument price.

**Generalized Autoregressive Conditional Heteroskedasticity (GARCH):** A statistical procedure for modeling a variable where the current changes in a variable are based on past changes in a complex manner.

**Generalized Sharpe Approach:** An extension of the Sharpe ratio incorporating the marginal contribution of the instrument to the portfolio.

**Generalized Wiener Process:** A stochastic process that can have a drift term and a normally distributed noise term.

**Generation Asset:** A physical plant used to generate electricity.

**Geometric Average:** A numerical calculation of the central location, useful for computing the growth rate of an investment.



**Geometric Brownian Motion (GBM):** A stochastic process that results in the underlying variable having a lognormal distribution.

**Geometric Compounding:** The calculation of return by incorporating the effect of prior returns, such as interest on interest.

**Geometric Excess Return (GER):** The excess return of a financial instrument over some bogey, the total return of the instrument divided by the total return of the bogey minus one.

**Greeks:** Comparative static measures that are represented by the Greek alphabet. See *Delta* and *Gamma*.

**Gross Expense Ratio:** The annualized rate that investors pay for fund management without adjusting for any discounts or other fee waivers. See *Net Expense Ratio*.

**Gross Market Value (GMV):** Total market value of all outstanding derivatives contracts with either positive or negative (taken as absolute value) market values.

**Growth Fund:** A diversified stock portfolio comprised of stocks believed to appreciate in price with minimal focus on dividend payouts.

**Harmonic Mean:** A complex averaging method often used with financial multiples like market-to-book ratio and price-to-earnings ratio, where the ratio is at risk of being undefined (e.g., earnings = 0).

**Hedge:** A contract or trading strategy used to reduce the risk of a position or portfolio.

**Hedging:** The activity of mitigating risk, typically within the context of executing derivatives contracts.

**Hedge Fund:** A pool of money used for proprietary trading and can have excessive risk through derivatives or leverage.

**Hedging Effectiveness (HE):** A statistical measure of how accurate a hedging strategy was in the past.

**Hedging Risk:** The risk that the hedging strategy fails to perform as anticipated.

**Hedgulating:** A coined term to describe the speculative activity surrounding hedging. This type of activity often results in being whipsawed (subjected to a double loss).

**Highly Skewed:** When the third moment about the mean is either less than  $-1$  or greater than  $+1$ .

**Historical Analysis:** A backward-looking analysis of market data in an effort to better understand risk and expected return.

**Historical Scenarios:** Stress testing the current portfolio based on historical events assuming they occur today.





**Historical Volatility:** A measure of the actual variability of the portfolio using historical prices. Compare with *Implied Volatility*.

**Historical Simulation VaR:** The value-at-risk computed assuming the estimated distribution is the one that occurred based on past data.

**Holding Period Return:** Calculated in different ways (e.g., discrete or continuous), profit divided by investment or the return per dollar invested.

**Horizon Risk:** The risk that the hedged exposure was longer or shorter than anticipated.

**Human Risk:** The risk that personnel deliberately or inadvertently cause the firm losses.

**Hypothecation:** The act of pledging securities by counterparty to a firm as collateral.

**Illiquidity:** See *Liquidity*.

**Implied Correlation:** The value of the correlation coefficient assuming the current market prices are correct.

**Implied Dividend:** Computed value based on closing prices and adjusted closing prices in an effort to infer the cash dividend amount recorded by the data service.

**Implied Values:** Parameters that are estimated from market prices based on theoretical valuation models.

**Implied Volatility (IV):** The volatility that equates the actual market option price with the theoretical option value.

**Incremental VaR (IVaR):** The change in value-at-risk when a position is changed by a small amount scaled by the size of the position. One benefit is that the sum of IVaRs equals to the portfolio value-at-risk. Hence IVaR measures the contribution to the portfolio value-at-risk of each position.

**Independent Distribution:** A probability distribution that is not related to another distribution—a common assumption for the time series behavior of returns.

**Independent Risk Oversight:** An independent division or unit of a firm responsible for managing risk policies and auditing risk limits.

**Index:** A benchmark data series that is not tradeable and provides performance-related information.

**Information Ratio:** The ratio of the average return divided by the standard deviation, a variation of *Sharpe Ratio*, fails to account for the time value of money.

**Initial Margin:** The good-faith deposit required when entering a futures contract.



**Instrument:** a term used to denote the highest level of financial taxonomy that is measurable. Financial contracts and financial securities are types of instruments. Examples include stocks, bonds, call options, put options, swaps, and even measurement data such as temperature measurements.

**Interaction term:** When applied to return attribution that allocates a portion of the measured alpha into three categories, sector allocation decision (*SAD*), security selection decision (*SSD*), and an interaction term (*I*), a residual value.

**Inter-commodity spread:** A spread involving two different commodities (for example, natural gas and heating oil).

**Integrated VaR (*IVaR*):** A value-at-risk measure that incorporate many risks, including market, credit, operational, and liquidity.

**Interest:** The amount of money charged for the use of money, usually expressed in currency units. See *Interest Rate*.

**Interest Rate:** The rate charged for the use of money, usually expressed in annual percentage terms. For example, 5% annual rate on \$100 for 2 years would result in \$10.25 in interest [=  $\$100(1 + 0.05)^2$ ].

**Internal Model:** A model designed and implemented within a firm based on the unique position of the firm, includes credit risk models and valuation models.

**International risk:** The risks associated with changes in international supply and demand and its impact upon the firm.

**Interpolation Risk:** The risk that the mathematical process of estimating a price or other value is wrong when using interpolation.

**Interval Evaluation Methods:** Includes several methodologies to appraise value-at-risk validity based solely on whether or not VaR events occur. Thus the data can be compressed into an indicator variable for each observation combined with a probabilistic statement on expected frequency of exceeding value-at-risk. These methods tend to have very low statistical power.

**Interval Forecast Test:** Value-at-risk can be viewed as a one-sided interval. This density evaluation method incorporates both the changing structure of the portfolio as well as the changing structure of underlying distributional assumptions, such as volatility.

**In-the-Money (*ITM*):** For call options, when the instrument price is above the strike price. For put options, when the instrument price is below the strike price.

**International Swaps and Derivatives Association (*ISDA*):** An financial derivatives industry association that is a “leader in promoting sound risk management practices and processes, and engages constructively with policymakers and legislators around the world to advance the understanding and treatment of derivatives as a risk management tool.” (<http://www2.isda.org/about-isda/>)



**Intra-Commodity Spread:** A spread where the only difference is expiration dates (for example, Jan and Feb).

**Intrinsic Value:** The value of an option assuming it is exercised immediately.

**Inverted Market:** See *Backwardation*.

**Invest:** The act of committing something valuable typically for a specific purpose. For example, the commitment of money for the purpose of achieving a monetary return.

**Investment:** Either the act of investing or the dollar amount invested.

**Investment Analyst:** Typically, a quantitative person responsible for analyzing any and all issues related to the investment decision-making process.

**Jensen's alpha:** A performance index measured in percentage points above the instrument's predicted return based on some market model, typically the *Capital Asset Pricing Model (CAPM)*.

**Jump Diffusion:** A stochastic process that permits large changes in the variable.

**Kappa:** See *Lambda*.

**Kurtosis:** A statistic used to describe the shape of the tails of a probability distribution.

**Lambda:** A measure of the change in a position for a small change in volatility.

**Large-Cap Fund:** A diversified stock portfolio comprised of companies with a market capitalization typically greater than \$10 billion.

**Lattice:** A procedure for describing price movements where for each time step the prices are permitted to change to only a specified number of values. See *Binomial Tree*, for example.

**Leg:** A portion of a contract. For example, the fixed side of a swap.

**Legal Risk:** The risk that a particular counterparty is deemed not responsible for their contractual obligations.

**Level 1 Fair Values:** Instrument values are based on quoted prices in active markets.

**Level 2 Fair Values:** Instrument values will typically involve quoted prices of similar instruments in active markets, if available. If not available, then quoted identical instrument values where markets are inactive are used. Finally, instruments values are produced from inputs other than quoted prices, but are observable (e.g., interest rates, implied volatilities, and credit spreads).

**Level 3 Fair Values:** Instrument values will involve inputs that are unobservable.



**Leverage:** Borrowing money to facilitate gaining additional risk exposure, can be achieved through derivative transactions.

**LIBOR (or Libor):** See *London Interbank Offered Rate*. LIBOR ceased being reported on June 30, 2023.

**Limit Order:** An order to buy or sell with limits on the price willing to be paid or received.

**Linearity:** Graphically illustrated by a straight line, usually involving a non-random process.

**Linear Instruments:** Instruments that have the same dollar change for changes in the underlying instrument, forward contracts, futures contracts and swaps are typically linear instruments. Contrast with *Nonlinear Instruments*.

**Liquidity:** The ease with which instruments can be traded without dramatically altering their current quoted prices.

**Liquidity Risk:** The risk that there will be sizeable costs incurred when an instrument is traded.

**Lognormal Distribution:** A two-parameter probability distribution exhibiting positive skewness and the lowest value is zero.

**London Interbank Offer Rate (LIBOR or Libor):** The interest rate quoted for borrowing between high quality banks, where the borrowing is outside the legal jurisdiction of U.S. banking regulations.

**Long Hedge:** A hedge involving a long position in a futures contract.

**Long Position:** A position that is purchased, such as long a stock, long a call option, or long a put option.

**Macroeconomic Risk:** All the risks related to an overall change in the economy.

**Maintenance Margin:** The good-faith deposit required when holding a futures contract, usually lower than the initial margin.

**Margin:** Good-faith collateral to minimize credit risk.

**Margin Call:** Occurs when the margin account falls below the maintenance margin, additional money is required to be posted to bring the account back to the initial margin.

**Marginal Contribution to Expected Excess Return (MCEER):** A financial instrument's weight in a portfolio times the difference between the expected return and the risk free interest rate.

**Marginal Contribution To Risk (MCTR):** A financial instrument's weight in a portfolio times the covariance between the instrument's return and the portfolio return.

**Marginal Default Rate:** The probability of default during a stated period of time in the future.



**Marginal Distribution:** The probability distribution of one variable assuming a fixed value for all other variables.

**Market Capitalization (Market Cap):** A value found by multiplying the share price by the number of shares outstanding.

**Market Makers:** A trader willing to execute trades for either buying or selling on exchanges, these traders have access to valuable information, such as the limit orders.

**Market Risk:** Encompasses all forms of risks related to market prices.

**Market Price:** See *Price*.

**Market Price of Risk:** The additional average return required for bearing risk, per unit of risk taken.

**Market VaR:** Measures the anticipated worst loss (mark-to-market change) over a stated time period under normal market conditions at a pre-specified confidence level focused solely on market-related events and no other events, such as credit or liquidity events.

**Mark-to-Cost:** The valuation based on a particular firm's cost of producing the commodity. Contrast with *Mark-to-Market*.

**Mark-to-Market (M2M or MTM):** The current value of the position or portfolio, where short positions have negative value.

**Mark-to-Market Change:** The dollar gain or loss in the mark-to-market over the appropriate horizon (typically daily).

**Mark-to-Model:** The current value of the position or portfolio based on a theoretical model and not current market prices.

**Mark-to-Model Risk:** The risk that the model fails to accurately reflect the current market price.

**Maturity:** The expiration of an instrument, such as the option maturity.

**Maximum Drawdown:** A measure of an instrument's largest loss of value from its peak value and its trough value.

**Mean:** See *Expected Value*.

**Mean Reversion:** The statistical process by which a variable tends to move back to its mean, a useful property when modeling energy prices.

**Mean-Squared Error:** A statistical measure computing the average of square of the error terms, a measure of estimation error.



**Mean-Variance Criterion:** An investment selection criterion that favors a higher mean and/or a lower variance.

**Median:** The median is halfway through an ordered set of data or the probability density function.

**Mid-Cap Fund:** A diversified stock portfolio comprised of companies with a market capitalization typically less than \$10 billion but greater than \$2 billion.

**Middle Office:** Links the front and back office, providing quantitative risk analysis and validating valuation models and risk measures.

**Mid Quote:** One half of the sum of the bid and offer prices.

**Missing Data:** When data is absent from a data set. Reasons for missing data includes weekends, routine holidays, short-term market disruptions, and long-term series (e.g., security not listed for first year of data set).

**Mode:** The most frequently observed value within a data set or the peak of the probability density function.

**Model Value:** See *Value*.

**Modeling Risk:** The risks related to selecting the wrong valuation model or the wrong market model. See *Mark-to-Model Risk*.

**Moderately Skewed:** Term used when skewness lies between  $-1$  and  $-1/2$  or between  $+1/2$  and  $+1$ .

**Modern Portfolio Theory (MPT):** A theory quantifying the benefits of diversification, assist in portfolio construction with the highest mean for a given standard deviation or the lowest standard deviation for a given mean.

**Moments:** Selected measures related to statistical analysis of data, such as the expected value being the first moment.

**Moneyness:** The dollar amount an option is in-the-money or zero.

**Monte Carlo Simulation:** Uses some form of random number generator to simulate the potential future changes in instrument values. The goal is to construct a reasonable sample distribution as a proxy for the actual distribution.

**Monte Carlo Simulation VaR:** The value-at-risk computed assuming the estimated distribution is generated by Monte Carlo simulation.

**Multivariate Statistics:** Analysis based on more than one variable, particularly how these variables are interrelated statistically. See *Univariate Statistics*.

**Naked Position:** A position in the underlying instrument that is not hedged in any way.



**Needs-Driven Management:** Management focus is primarily on each entity's *culture* and how it interacts with markets. Contrast with *View-Driven Management*.

**Negative Skewness:** A measure of asymmetry where the probability density function has a longer right tail and more mass on the left tail. See *Positive Skewness*.

**Net Asset Value (NAV):** The current value of assets less the current value of liabilities.

**Net Expense Ratio:** The annualized rate that investors pay for fund management after adjusting for any discounts or other fee waivers. See *Gross Expense Ratio*.

**Net Hedging Hypothesis:** The net hedging hypothesis assumes that there are some market imperfections that prevent arbitrage, hence the arbitrage transactions driving the cost-of-carry model are not feasible. The net hedging hypothesis assumes that speculators are risk averse and will gain from trading, on average.

**Netting:** The offsetting of gains and losses, the net proceeds being paid. Results in a dramatic decline in credit risk.

**New York Mercantile Exchange (NYMEX):** A commodities exchange in New York city, trading many energy-related futures and futures options contracts.

**No-Arbitrage Models:** A theoretical valuation model based on the assumed ability to conduct arbitrage.

**Node:** With lattice procedures, the points representing a location in time and a specific price value. See *Lattice* and *Arc*.

**Noise:** The random component of a stochastic process.

**Nonlinear Instruments:** Instruments that do not have the same dollar change for changes in the underlying instrument, option contracts, caps and floors are typically nonlinear instruments. Contrast with *Linear Instruments*.

**Non-Firm Contract:** A power derivatives contract that does not requires delivery. Contrast with *Firm Contract*.

**Non-Ruthless Exercise:** Occurs when an option is exercised not based on the market price of the underlying instrument, rather based on demand (such as electricity).

**Non-Systematic Risk:** See *Specific Risk*.

**Normal Backwardation:** Involves the unobservable *expected* future spot prices and is said to occur when the futures price is below the unobservable expected future spot price. See *Backwardation*.



**Normal Distribution:** A two-parameter probability distribution that is symmetric and the values range from negative to positive infinity. This distribution is the familiar bell-shaped curve. It can be completely described with only two parameters, the mean and the standard deviation. The mean is a measure of central location or the expected value of the risky variable. The standard deviation is a measure of dispersion or risk. The normal distribution is symmetric around the mean.

**Normalized:** The transformation of one set of values to another, for example, many macroeconomic values are normalized to 100 at some starting point and interest rates are normalized to annual rates.

**Normal Market:** Futures markets are said to be normal when the futures price is above the current spot price. See *Contango*.

**Normal VaR:** Measures the anticipated worst loss (mark-to-market change) over a stated time period under normal market conditions at a pre-specified confidence level where the risk variables are assumed to be normally distributed.

**Notional Amount** (Notional Principal (archaic use)): A numerical value that forms the basis of calculating cash flows on derivative instruments.

**NYMEX:** See *New York Mercantile Exchange*.

**Offer Price:** see *Ask Price*.

**Off-Peak:** The hours during the week not classified as on-peak hours, usually when electricity is not in high demand. See *On-Peak*.

**On-Peak:** The hours during the week when electricity is generally in high demand, used in derivatives contract design. See *Off-Peak*.

**Open Interest:** Used with futures markets, one half of the contracts outstanding, where the long and short positions are separate legal contracts with the clearing corporation, usually a measure of liquidity.

**Operational Risk:** A risk introduced into an entity due to ineffectiveness in operational controls, for example, errors in the reported VaR, and the subsequent inappropriate hedging activities, because of the failure to capture the economics of structured transactions.

**Option:** A contract that allows the owner the right to purchase (call option) or sell (put option) an instrument at the specified strike price on or (perhaps) before a specified date.

**Optionality:** The unique attributes acquired through owning an option, either directly from a position in an option contract or indirectly through exposure to some embedded attributes that behave like an option, revealed primarily through exposure to changes in volatility.

**Optionality Risk:** The unique risk of owning an option, due mostly to the exposure to changes in volatility.

**OTC:** See *Over-the-Counter*.





**Outliers:** Extreme observations within a set of data, useful for scenario analysis and assessing value-at-risk.

**Out-of-the-Money (OTM):** For call options, when the instrument price is below the strike price. For put options, when the instrument price is above the strike price.

**Over-the-Counter Markets (OTC):** Instruments that are not listed on organized exchanges, usually associated with greater liquidity risk and greater counterparty credit risk.

**Path Dependent Option:** An option whose value depends, at least in part, on the particular values the underlying instrument prices recorded during at least part of the option life.

**Parametric Method:** Statistical methods that use the parameters of a known distribution, such as the normal distribution. The normal distribution parameters are the mean and standard deviation.

**Parametric VaR:** Measures the anticipated worst loss (mark-to-market change) over a stated time period under normal market conditions at a pre-specified confidence level assuming some particular probability distribution, such as the normal distribution.

**Parisian Option:** A type of barrier option where the condition is the underlying stay outside the barrier for a predetermined period of time.

**Payment date:** Related to dividend payments, companies typically need several weeks to audit the holders of record to be sure who is and is not eligible to receive the dividend payments.

**Payoff:** The unique value of the instrument based on the underlying instrument value, for European-style options, it is the value at expiration.

**Peak:** A time period when electricity is in high demand.

**Peak Credit Exposure:** The current credit exposure plus a value-at-risk type calculation of the change in credit exposure over some time horizon at a given confidence level.

**Peak Value:** Over some stated historical period, the highest observed value of an instrument's price. See *Trough Value*.

**Percentage Marginal Contribution to Expected Excess Return (%MCEER):** A financial instrument's weight in a portfolio times the difference between the expected return and the risk free interest rate as a percentage of the difference between the expected return of the portfolio and the risk free rate.

**Percentage Marginal Contribution To Risk (%MCTR):** A financial instrument's weight in a portfolio times the covariance between the instrument's return and the portfolio return as a percentage of the portfolio variance.



**Perfect Market:** An assumption that there are no transaction costs, 100 percent liquidity, and no other restrictions on forward contract or spot contract trading.

**Performance Attribution:** The process of assessing the performance of the enterprise's component activities, the act of decomposing returns to appraise which component activities are worthwhile.

**Performance Evaluation:** The process of assessing the how well a division or portfolio has done, usually involves comparing returns against a particular benchmark.

**Periodic Rate of Return:** The return per dollar invested over some stated period.

**Periodic Settlement:** With swaps and other derivatives, one of many cash or physical deliveries required in the contract.

**Physical Contract:** A legal obligation to make or take physical delivery.

**Physical Settlement:** A contract that settles with the counterparties exchanging the physical asset. Converse of *Cash Settlement*.

**Political Risk:** The risk of changes in laws or changes in regulations result in losses for the firm.

**Population Kurtosis:** A statistic used to describe the shape of the tails of a population probability distribution. See *Sample Kurtosis*.

**Population Mean:** The probability-weighted sum of possible population values, a measure of central value. See *Sample Mean*.

**Population Skewness:** A measure of asymmetry in the population probability distribution, positive (negative) skewness exhibits more likelihood of high (low) outcomes. See *Sample Skewness*.

**Population Variance:** A measure of dispersion within the population probability distribution, the average squared deviations from the mean. See *Sample Variance*.

**Portfolio:** A set of instruments associated together.

**Portfolio Analysis:** An assessment of a portfolio, usually for the purpose of minimizing risk or maximizing expected returns.

**Portfolio Insurance:** Any process or trading strategy that limits the downside risk, usually associated with buying put options.

**Portfolio Theory:** See *Modern Portfolio Theory*.

**Portfolio Turnover Ratio:** A measure of active trading. If no shares of a portfolio were traded over a period, then the portfolio turnover ratio is zero. The portfolio turnover ratio is the percentage of a portfolio that has been replaced within a given period, typically one year.



**Position:** Position typically references a portfolio of instruments, such as one's stock portfolio held at a brokerage firm. Examples include various securities portfolios as well as financial derivatives combinations, such as spreads and collars.

**Position Limits:** Usually imposed by the firm for the purpose of managing credit risk, sets a maximum amount of potential exposure to a particular counterparty. Also refers to the limits placed by exchanges and other regulatory agencies on the size of positions taken with derivative securities.

**Positive Skewness:** A measure of asymmetry where the probability density function has a longer left tail and more mass on the right tail. See *Negative Skewness*.

**Precious Metals:** Commodities including gold, silver and platinum, metals that are relatively scarce.

**Presupposition:** A requirement that is antecedent in logic or fact, that is, it is what is assumed beforehand.

**Price:** An observed or estimated currency amount a willing buyer will pay a willing seller to acquire the property rights to some underlying. Price is rarely equal to some theoretical model value. See *Value*.

**Price Continuity:** When markets have liquidity, market participants can execute transactions at current quoted prices and thus have transaction certainty.

**Price Discovery:** One of the benefits of derivatives markets as they permit all market participants to know the current value of obligations in the future.

**Price Swing Option:** A swing option where one of the counterparties exercise strategy is based on the market price. Contrast with *Demand Swing Option*.

**Primitive Factors:** The fundamental factors driving the stochastic behavior of other variables, usually financial prices.

**Principal Components Analysis (PCA):** A statistical procedure for identifying a set of factors explaining a large portion of the variability of returns, usually associated with attempting to reduce the number of risk factors.

**Probability Density Function (PDF):** A mathematical expression or function that maps the potential outcomes to the probability of observing these outcomes.

**Product risk:** The risk that a product becomes obsolete or otherwise impaired.

**Profit:** Dollar or percentage amount of gain or loss.

**Protective Put Buying (PPB):** A form of portfolio insurance, where you are long the underlying instrument and long a put option, sets a floor on possible losses.



**Publicity Risk:** The risk of losses due to adverse publicity arising from a variety of sources such as trading activities.

**Put-Call Parity (PCP):** A mathematical statement of the expected price relationship between four markets, underlying market, financing (borrowing or lending rates), call options, and put options.

**Put Option:** An option that allows the owner the right to sell an instrument at the specified strike price on or before a specified date.

**Pseudo-Random Numbers:** A series of numbers that are deterministic, but appear random, used often in Monte Carlo simulation.

**Quant:** See *Quantitative Analyst*.

**Quantitative Analysis:** The process of analyzing and modeling the variable itself. Contrasts with *Fundamental Analysis*.

**Quantitative Analyst:** A person engaged in quantitative analysis.

**Quantiles:** The probability distribution can be divided into  $n$  equal parts, the values up to each part is called the quantiles.

**Quartiles:** The probability distribution can be divided into four equal parts at stated percentiles (25%, 50%, 75%, and 100%, the values up to each percentile is called the quartiles.

**Quasi-Monte Carlo Simulation:** The value-at-risk computed assuming the estimated distribution is generated using quasi-random numbers in Monte Carlo simulation.

**Quasi-Random Numbers:** A random number generator that focuses on assuring the numbers are uniformly spaced, avoids random numbers being clumped together.

**R-Square ( $R^2$ ):** The correlation coefficient squared and a measure of hedging effectiveness. In linear regressions give the portion of the dependent variable variance explained by the independent variables.

**Random:** See *Stochastic*.

**Random Numbers:** A series of numbers that do not have any clear pattern, knowledge of a subset of these numbers is not helpful in predicting other numbers.

**Random Walk:** Usually used in the context of prices and implies that past price history is not useful in forecasting price changes in the future.

**Rate of return:** Expressed as a percentage and typically annualized, the return per dollar invested.

**Raw Data Risk:** The risks related to input estimation error for market models. For example, the techniques to fill in missing data may cause an inappropriate amount of smoothing in the historical sample.



**Realized Gain:** The dollar gain of the position or portfolio above the initial value when the position was entered and has been offset.

**Realized Loss:** The dollar loss of the position or portfolio below the initial value when the position was entered and has been offset.

**Real Option:** Embedded options, sometimes in managerial choices, contained in real assets as opposed to financial assets.

**Record date:** A date that establishes ownership of shares, typically related to cash dividends or stock splits.

**Regime Shift:** A statistical concept representing when a variable experiences a dramatic change, for example, some event occurs that doubles market volatility.

**Regulatory Risk:** See *Political Risk*.

**Rehypothecation:** The act of pledging or lending of the counterparty's securities by the firm to other financial institutions for some financial benefit.

**Relative VaR:** A value-at-risk statistic that is based on the distance from the mean (see *Absolute VaR*).

**Reliability:** The contractual agreement to make delivery of a particular energy source.

**Reliability Council:** Trading areas for electricity defined by the North American Reliability Council.

**Reputation Risk:** The risk of a degradation of a firm's reputation due to inappropriate trading activities or other problems.

**Residual:** A statistical concept of the remaining variability that cannot be explained by a model or process.

**Residual Risks:** Those risks that tend to have a second order effect in most market situations.

**Resiliency:** Measures the speed at which new orders enter the market in response to market imbalances.

**Retail Market:** A market designed to serve individuals or small size transactions, for example, electricity is sold to residential customers in the retail market.

**Return:** A generic term referencing either dollar amount or percentage amount related to gains or losses from an investment.

**Reverse Carry Arbitrage (RCA):** An arbitrage trade that is typically conducted by short selling the spot instrument, lending the proceeds from short sale, and buying the forward or futures contract.



**Reverse Engineering:** The analytical process of observing the outcomes in an effort to identify the valuation model or risk system used.

**Risk:** Usually refers to the potential for monetary loss where the probability distribution can be estimated.

**Risk-Adjusted Return on Capital (RAROC<sup>TM 1</sup>):** The risk-adjusted performance is based on the amount of profit relative to economic capital required, takes the profits and subtracts an appropriate risk adjustment.

**Risk Adjustment:** The process of modifying a result to accommodate the distaste for risk.

**Risk-Free Rate:** The interest rate associated with computing the present value of a known payout, commonly estimated with U.S. Treasury securities or, if the marginal dealer's cost of funds is required, Libor is used.

**Risk Limits:** The process used to set quantity restrictions on various financial exposures where the restrictions are based on risk calculations such as value-at-risk.

**Risk Systems:** Usually, a software system designed to measure the risk exposure of the firm.

**Risk Management:** The process of identifying, measuring, monitoring, and managing financial risk.

**RiskMetrics<sup>®2</sup>:** Produced by J. P. Morgan, procedures and data to measure market risks in various financial markets.

**Rolling Hedge:** A hedging strategy that requires replacing derivative contracts when they expire.

**Rollover Date:** The date that a derivatives position is modified, typically, when longer dated contracts replace shorter-dated contracts.

**Sample Kurtosis:** A statistic used to describe the shape of the tails of a sample probability distribution. See *Population Kurtosis*.

**Sample Mean:** The probability-weighted sum of possible sample values, a measure of central value. See *Population Mean*.

**Sample Skewness:** A measure of asymmetry in the sample probability distribution, positive (negative) skewness exhibits more likelihood of high (low) outcomes. See *Population Skewness*.

**Sample Variance:** A measure of dispersion within the sample probability distribution, the average squared deviations from the mean. See *Population Variance*.

**Scenario Analysis:** Involves identifying specific events that translate into specific values for the risk factors. These values are then assessed in the context of the current portfolio.

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<sup>1</sup> RAROC is a trademark of Bankers Trust.

<sup>2</sup> A registered trademark of J.P. Morgan and Co., Inc.



**Seasonality:** Variations in data that can be attributed to the calendar in some way, for example, differences in power price behavior during the summer months.

**Sector Allocation Decision (SAD):** A measure of the return or risk related to excess allocation to a particular sector

**Sector Allocation Weights (SAW):** The proportion of a portfolio allocated to a particular sector.

**Security:** A financial instrument representing some valuable claim, such as common stock, bond, or other negotiable instrument.

**Security Selection Decision (SSD):** A measure of the return or risk related to excess return due to the security selection decisions.

**Serial Correlation:** The correlation between two observations from the same time series variable but at different points in time.

**Settlement:** The process of complying with the contractual obligations once the financial uncertainties have been resolved.

**Settlement Price:** The price upon which settlement is based.

**Sharpe's Ratio:** A performance measure, the average return less the risk-free rate divided by the standard deviation.

**Short Hedge:** A hedge involving a short position in a futures contract.

**Short Position:** A position that is sold, such as selling a stock, selling a call option, or selling a put option.

**Sigma ( $\sigma$ ):** See *Standard Deviation*.

**Simulation:** A category of processes designed to model the randomness observed in some data series. See, for example, *Historical Simulation* and *Monte Carlo Simulation*.

**Skewness:** A measure of asymmetry in the probability distribution, positive (negative) skewness exhibits more likelihood of high (low) outcomes.

**Small-Cap Fund:** A diversified stock portfolio comprised of companies with a market capitalization typically less than \$2 billion.

**Soft Commodity:** Typically references agricultural markets and excludes energy and metals markets.

**Sortino Ratio:** A measure of the risk-adjusted return of an instrument where risk is measured in terms of the downside deviation of the instrument's rates of return



**Spark-Spread Option:** An option on the difference between natural gas and power prices, appropriately adjusted.

**Specific Risk:** The risk related to the instrument itself as opposed to the general category of instruments. Also called non-systematic risk or diversifiable risk.

**Speculation:** The act of committing something valuable typically for the purpose of increasing exposure to risk. Speculators typically have at least some hopes of gain. Speculating typically connotes a significantly higher risk exposure than investing. See *Hedging*.

**Spinoff:** A corporate action that results in a portion of the company being sold or otherwise disposed of.

**Split:** See *Stock Split*.

**Spot Curve:** The mapping of yield and maturity of zero coupon bonds of similar credit rating, usually U.S. Treasury securities.

**Spot Price:** The price for immediate delivery.

**Spread:** Usually, the difference between the prices of two instruments, such as futures contracts.

**Spread Option:** An option of a spread.

**Spread Risk:** The risk that the spread between two risky variables moves in ways unexpected.

**Standard Deviation ( $\sigma$ ):** The square root of the variance, a measure of dispersion. See *Variance*.

**Standard Normal Distribution:** A normal distribution with mean zero and standard deviation of one.

**Stochastic:** A variable that has any form of randomness, the opposite of *deterministic*.

**Stochastic Process (SP):** A process with some form of random behavior or outcome about which there is risk. Contrast with *Deterministic Process*.

**Stochastic Volatility:** A stochastic process where the magnitude of the noise term changes.

**Stock:** An equity instrument, evidencing a partial ownership claim on an entity, typically a company.

**Stock split:** A corporate action where each share of stock is exchanged for some specified number of new shares. For example, a 2-for-1 stock split will result in one's share ownership doubling.

**Straddle:** An option strategy where you purchase both a call option and a put option with the same strike price.

**Stress Testing:** The procedure of determining the expected loss from specific hypothetical events.





**Strike Bucket:** The aggregation of positions based on the strike price.

**Strike Price:** The price at which an option can be exercised.

**Strip:** A portfolio of positions for the same underlying except for expiration dates.

**Structural Model:** A valuation model based on fundamental variables such as cost.

**Structured Transaction:** Typically, a long-term and possibly complex contracts to take or make delivery of some commodity, common in electricity markets.

**Suitability Risk:** The risk that a particular trading position is deemed inappropriate and results in losses for a firm.

**Survivorship Bias:** A statistical bias that occurs due to funds that liquidate or otherwise cease to exist during the stated period.

**Survivorship Percentage:** The percentage of funds in existence at the beginning of the time period that are still in existence at the end of the time period.

**Swap Contract:** A contractual agreement to exchange a series of cash flows in the future, typically valued as a series of forward contracts.

**Swaption:** An option on a swap.

**Swing Option:** An option to increase the quantity of the underlying, typically contained in swap agreements.

**Symmetric Hedging:** Hedging a risk with derivatives contracts that can experience both large losses and large gains and typically does not cost anything to enter, for example, forward contracts, futures contracts, and swaps. See *Asymmetric Hedging*.

**Symmetric Instrument:** An instrument that can experience both large losses and large gains and typically does not cost anything to enter, for example, forward contracts, futures contracts, and swaps. See *Asymmetric Instrument*.

**Symmetric Risk:** A risk exposure that can result in both large losses and large gains.

**Systemic Risk:** The risk that the overall marketplace is incapable of handling a vast amount of risk, such as market, liquidity, or credit risk.

**Systemic Shock:** A major event that adversely impacts the entire marketplace.

**Systems Risk:** The risk of loss due to a failure in the trading operations systems, either software or hardware.

**Systematic Risk:** The risk that cannot be diversified away with more underlying securities.



**Tax Risk:** The risk that tax laws will be changes or re-interpreted in an adverse manner for the firm, resulting in losses.

**Tail:** The extreme events within a probability distribution.

**Technology Risk:** The risks related to the rapid changes occurring with technology.

**Tenor:** The contractual frequency of settlement, such as monthly or quarterly.

**Term Desk:** The trading desk that handles long-term (usually longer than a month) deals. Converse to *Cash Desk*.

**Term Structure:** The pattern of a variable as a function of maturity, for example, the interest rates, forward prices, and forward volatilities.

**Theta ( $\theta$ ):** The change in a position for a small change in time.

**Tick:** The smallest allowable change in a market price.

**Time Bucket:** The aggregation of positions based on the time to maturity.

**Time Decay:** Measured by theta, the rate of loss or gain based on just the movement of time. See *Theta*.

**Time Series Analysis:** The study of data over time for the purpose of identifying risk variables and calibrating valuation models.

**Time Value:** The present value of money over time.

**Total return:** Usually measured on a per dollar basis, the dollar value of an investment at some future point in time relative to the initial investment.

**Tracking Error:** The difference between mark-to-market and mark-to-model, a source of risk within a risk system.

**Trees:** See *Lattice*.

**Treynor's Index (or Treynor's Ratio):** A performance measure, the average return less the risk-free rate divided by the beta.

**Trough Value:** Over some stated historical period, the lowest observed value of an instrument's price typically after its peak value. See *Peak Value*.

**Turnover ratio:** See *Portfolio Turnover Ratio*.



**Uncertainty:** Usually refers to the potential for monetary loss where the probability distribution cannot be estimated, either because the potential outcomes cannot be enumerated, or the probability of each potential outcome cannot be estimated.

**Underlying:** The instrument whose value forms the basis of the value of a derivatives contract.

**Univariate Statistics:** Analysis based on one variable and related derived statistical value, such as the mean and standard deviation. See *Multivariate Statistics*.

**Unrealized Gain:** The dollar gain of the position or portfolio above the initial value when the position was entered but has not yet been offset.

**Unrealized Loss:** The dollar loss of the position or portfolio below the initial value when the position was entered but has not yet been offset.

**Unsystematic Risk:** The risk that can be diversified, hence, typically assume to be uncompensated risk.

**Upside Capture Annualized Return (UCAR):** A measure that incorporates only the instrument's total return only when the bogey total return is greater than one. See *Downside Capture Annualized Return*.

**Upside Capture Ratio (UCR):** A measure that incorporates only the total return only when the bogey total return is greater than one divided by the bogey's total return only when the bogey total return is greater than one. See *Upside Capture Ratio*.

**Value:** An unobserved estimated currency amount an entity attributes to the property rights of some underlying. Value is often derived via a theoretical model and rarely does value equal to market price. See *Price*.

**Value-at-Risk (VaR):** Measures the anticipated worst loss (mark-to-market change) over a stated time period under normal market conditions at a pre-specified confidence level.

**Value Fund:** A diversified stock portfolio comprised of stocks that are seemingly "undervalued" relative to company attributes.

**Value-Weighted Statistics:** Statistics are aggregated by computing a weighted average of funds in a particular category over a stated period, computed as each fund's net assets divided by the category's net assets. See *Equally-Weighted Statistics*.

**Vanilla:** Usually, the simplest transaction within a class of transactions or the most popular transaction.

**VaR:** See *Value-at-Risk*.

**VaR Horizon:** The stated time period for computing value-at-risk.



**VaR Percentile Test:** A value-at-risk validation procedure that is a generalization of measuring the frequency of losses, but now considering all possible confidence intervals.

**VaR Validation:** A set of procedures for assessing whether actual return realizations are consistent with the implied probability density function from which initial VaR was reported.

**Variable:** A function that may assume any of a set of values.

**Variance:** A measure of dispersion, the average squared deviations from the mean.

**Variance-Covariance VaR:** The value-at-risk estimate based on the normal distribution of M2M changes.

**Variation Margin:** The additional margin required when there is a margin call.

**Vega:** See *Lambda*.

**View:** A perspective on how market prices are going to change often associated with trading activities.

**View-Driven Management:** Management focus is almost exclusively on markets and market-driven strategies typically based on linear view. Contrast with *Needs-Driven Management*.

**Volatility:** A measure of dispersion, usually reported with the standard deviation.

**Volatility Matrix:** A set of volatilities, for example, volatilities of contracts with different contract maturity dates.

**Volatility Risk:** The risk of loss in a position due to an unexpected change in volatility.

**Volatility Smile:** A non-linear volatility term structure.

**Volatility Term Structure:** A mapping of the relationship between maturity and volatility of similar debt instruments.

**Volume:** Quantity of a commodity.

**Volume Risk:** The risk that the quantity of a commodity differs from what was expected.

**Wholesale Market:** The purchase and sale of large quantities of a commodity between producers and large consumers.

**Wiener Process:** A unique stochastic process having the properties of a normal distribution.

**Worst-Case Scenario:** A process in scenario analysis of attempting to identify a reasonable largest negative extreme event.

**Yield:** The return on a debt security that can be measured in a variety of ways.



**Yield Curve:** A mapping of the relationship between maturity and yield of similar debt instruments.

