CME Group

Options Workshop May 2021

Paul Bloemendal – PRETB Pte Ltd

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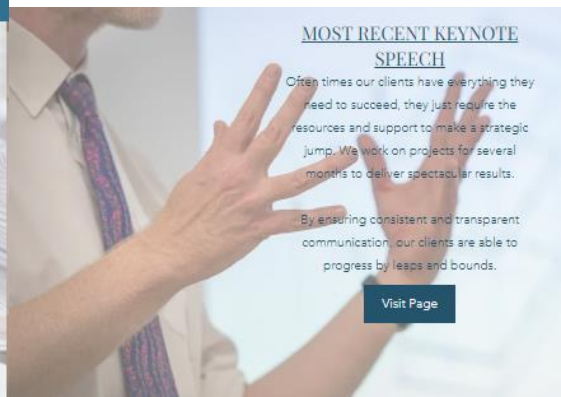

Our session today

Part I

Why Hedge? Why Now?

Natural Risk Exposure

Futures Markets

Options Basics

Premium

Part II

Historical Volatility And Implied Volatility

Greeks

Options Strategies

Soy / Palm Oil Derivatives

Conclusions

Why Hedge (insure) anything?

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- **Life is full of risk, but the question is:**

  Can you handle the costs in case something happens unexpectedly?

- **We deal with this by buying insurance coverage**
  - **Life insurance: in case you die? (Don't we all?)**
  - **Health insurance: covid and others**
  - **Home insurance: fire / earthquake risk**
  - **Car insurance: crash risk**
  - **So why not add price insurance on your feedstock?**
    - **Hedging = Insurance**
    - **Options are the easiest way to hedge**

Why Hedge (insure) explained

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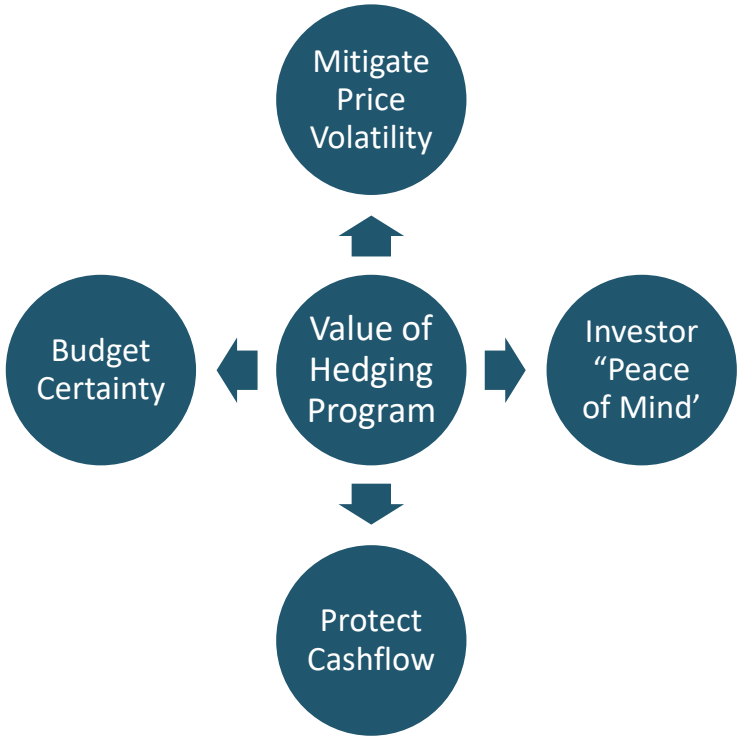
Example House Insurance

- **By paying the insurance premium, in effect you are buying the option that if something goes wrong, someone else will pay for it**
- **It can be seen as a self-insurance as it avoids potential large ticket costs with a low probability but with a high impact**
- **At the end of the year, your house still stands and nothing has happened, no claims were made. Your option expires worthless.**
- **But was paying the premium a good or a bad decision? Was it worth it?**
- **Options are all about value, never about costs. But tell that to your clients……**

The value of a hedging program can be measured by four key factors

F&O hedging market overview



Source: J.P.MORGAN AGRICULTURAL COMMODITIES 2015

Value of hedging program

- The value of the hedging program should not be measured by it's "outperformance" versus market prices
- Companies should not be concerned with the "profitability" of its hedging program; rather, it should be concerned with its ability to provide certainty and avoid exposure to any price shocks due to market volatility
- Such price shocks could result in decreased earnings and lack of stability from investors
- Reasons for implementing hedging program
  - Protecting cash flows to service debt (acquisition or normal operating)
  - Underpinning maintenance expense and capex
  - Minimizing volatility in cash flows
- Possible hedge program targets
  - Cover costs
  - Initial debt / equity investment payback
  - Minimum return on investment
  - Ongoing cash flows
  - Reduce volatility
- Hedge program considerations
  - Tenor: market appetite, curve shape (backwardation/contango), seasonality
  - Volume: market liquidity
  - Products hedged: Swaps vs. Options; hedge basis risk; current market price in relationship to hurdle rates
  - Credit: credit availability, tenor, volume, pricing levels, collateral/margin requirements
  - Cash availability: ability to pay premium for options / restructures

Why Hedge Now? Commodity Super Cycle!

World Bank Commodities Price Data (The Pink Sheet) **4-May-2021**

			Annual Averages			Quarterly Averages					Monthly Averages		
			Jan-Dec	Jan-Dec	Jan-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Feb	Mar	Apr
Commodity	Unit		2018	2019	2020	2020	2020	2020	2020	2021	2021	2021	2021
Energy													
Coal, Australia	$/mt	a/	107.0	77.9	60.8	68.0	54.4	52.1	68.6	89.5	86.7	94.9	92.2
Coal, South Africa	$/mt		97.6	71.9	65.7	76.7	56.9	57.2	71.9	86.8	82.8	90.7	89.1
Crude oil, average	$/bbl		68.3	61.4	41.3	49.1	30.3	42.0	43.6	59.3	60.5	63.8	63.0
Crude oil, Brent	$/bbl	a/	71.1	64.0	42.3	50.5	31.4	42.7	44.5	60.6	62.0	65.2	64.8
Crude oil, Dubai	$/bbl	a/	69.2	63.2	42.2	50.7	31.7	42.5	43.8	59.5	60.4	64.0	62.5
Crude oil, WTI	$/bbl	a/	64.8	57.0	39.3	46.0	27.8	40.9	42.6	57.8	59.1	62.4	61.7
Natural gas, Index	2010=100		82.1	61.1	45.5	44.7	35.9	42.3	59.2	78.7	97.5	65.6	71.1
Natural gas, Europe	$/mmbtu	a/	7.68	4.80	3.24	3.09	1.82	2.87	5.19	6.52	6.16	6.13	7.15
Natural gas, U.S.	$/mmbtu	a/	3.16	2.57	2.01	1.91	1.70	1.99	2.46	3.43	5.07	2.56	2.61
Liquefied natural gas, Japan	$/mmbtu	a/	10.67	10.56	8.31	10.00	9.69	6.67	6.90	8.93	9.88	7.89	7.96
Food													
Oils and Meals													
Coconut oil **	$/mt	b/	997	736	1,010	895	861	968	1,317	1,494	1,442	1,578	1,508
Fishmeal **	$/mt		1,525	1,448	1,433	1,380	1,412	1,479	1,460	1,484	1,478	1,476	1,485
Groundnuts	$/mt		1,320	1,338	1,839	1,753	2,050	1,859	1,692	1,797	1,875	1,623	1,425
Groundnut oil	$/mt	b/	1,446	1,407	1,698	1,393	1,609	1,878	1,878	...	...	...	...
Palm oil **	$/mt	b/	639	601	752	725	614	750	918	1,014	1,020	1,031	1,075
Palmkernel oil **	$/mt		926	665	824	821	710	730	1,035	1,400	1,354	1,478	1,482
Soybean meal **	$/mt	b/	405	347	394	362	349	380	486	531	549	483	463
Soybean oil **	$/mt	b/	789	765	838	808	707	865	972	1,131	1,121	1,170	1,202
Soybeans **	$/mt	b/	394	369	407	378	363	396	488	580	578	585	594
Grains													
Barley	$/mt	b/	125.9	128.1	92.5	114.8	91.9	80.4	...	...	...	...	...
Maize	$/mt	b/	164.4	170.1	165.5	167.6	146.3	156.0	192.0	241.6	245.2	245.2	268.2

Why Hedge Now?

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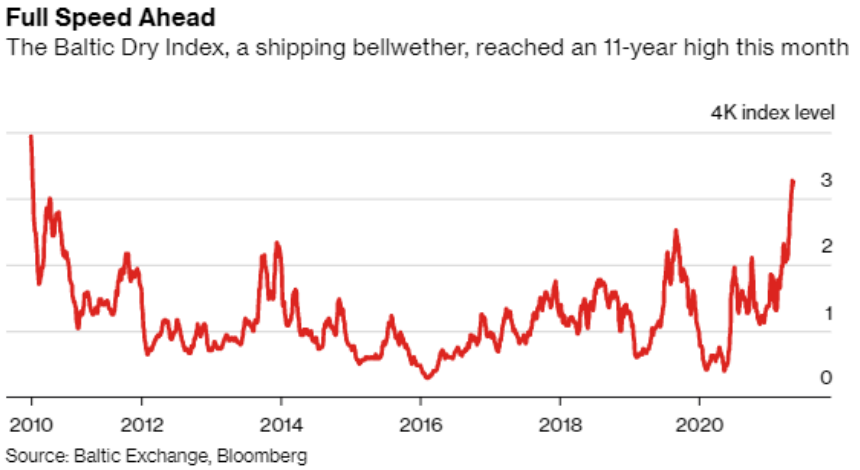
- Producers want to lock in forward sales at current levels
- Consumers missed out, need to cover pipelines
- Governments are stocking up
- Traders are printing money



Why Hedge?

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Hedge Considerations	
Refiners / Consumers / Importers	**Plantations / Producers / Exporters**
Risk: hedge against a rise in prices as natural ***Short***	Risk: hedge against a fall in prices as natural ***Long***
Buy physical paper or forward against refined sales	Sell physical paper or forwards
Buy futures, or sell against physical purchases	Sell futures, or buy against physical sales
Buy Call options, or sell Put options	Buy Put options, or sell Call options
Buy Call spreads or fences	Buy Put spreads or fences

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Financial Derivatives Contracts
Futures

Financial Derivatives Contracts - Futures

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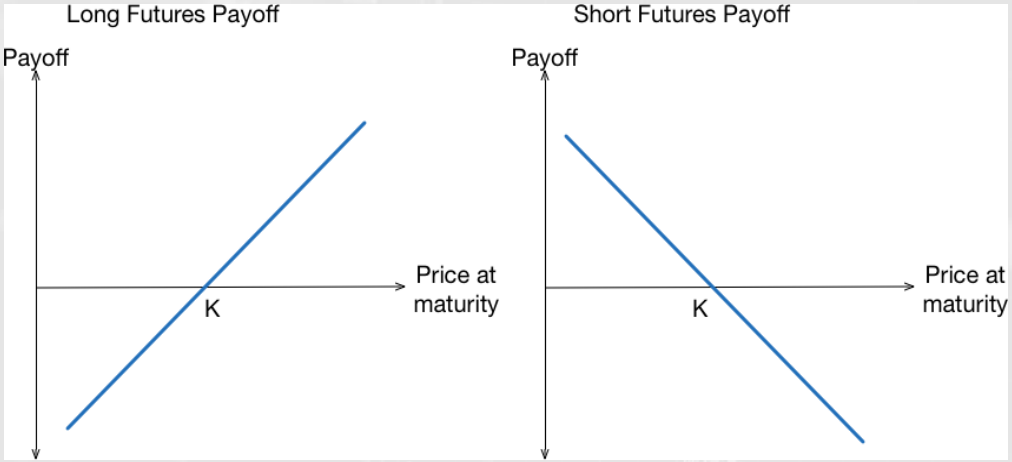
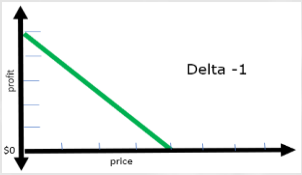
A futures contract is a financial contract obligating the buyer to purchase or the seller to sell a standardized asset specified predetermined future date and price.

- Futures contracts detail the quality and quantity of the underlying asset; they are standardized to facilitate trading on a futures exchange. Some futures contracts may call for the physical delivery of the asset, while others are settled in cash.



- For a long position, the payoff is ST (settlement) - K (strike), and it will benefit from a higher underlying price

- For a short position, the payoff is K (strike) - ST (settlement), and it will benefit from a lower underlying price



Financial Derivatives Contracts - Futures

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Basic concepts

Cash Price - Futures Price = Basis

Futures Price = Cash Price - Financing Costs + Cost of Carry (storage, security, transportation)

Basis Strengthening – Cash gains relative to futures more positive or less negative -> benefits short hedgers (commodity sellers)

Basis Weakening – Cash declines relative to futures less positive or more negative -> benefits long hedgers (commodity buyers)

The shape of the curve is dictated by Supply & Demand of the underlying and is influenced by Financing Costs + Cost of Carry (storage, security, transportation)

Contango / Carry is a situation where the futures price of a commodity is above the expected spot price

A market in contango reflects:

- healthy cash market
- availability is certain nearby
- the premium for longer dated maturities

Backwardation / Inverse is the market condition wherein the future price of a commodity is below the expected spot price

A market in backwardation shows:

- participants willing to pay more upfront
- lack of availability nearby in the underlying
- the discount for longer dated maturities

Financial Derivatives Contracts - Futures

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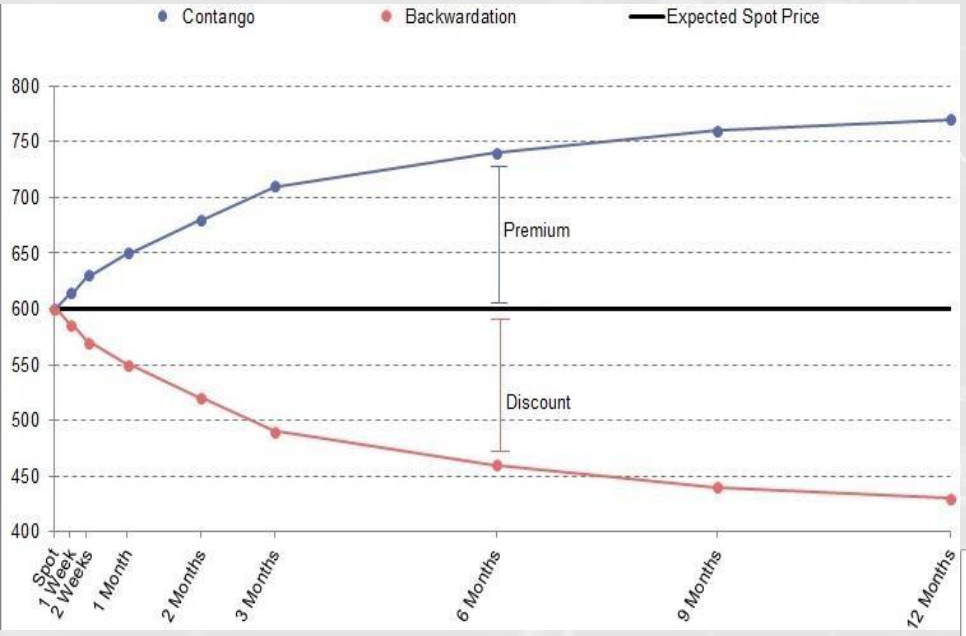
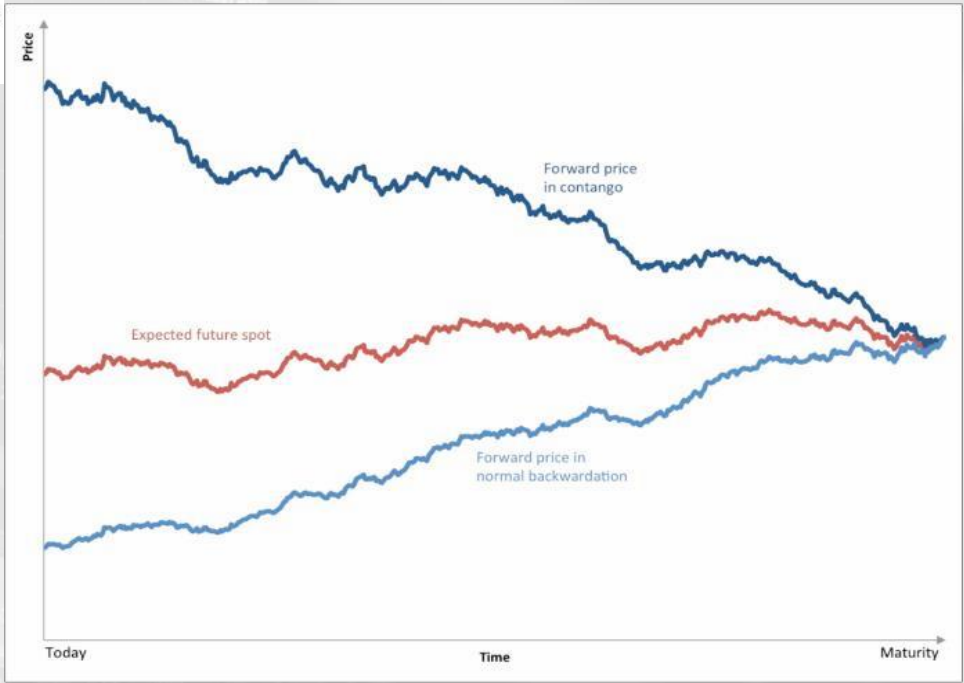


Contango/Carry and Backwardation/Inverse are terms used to define the structure of the forward curve



As futures become spot contract, the futures price and spot prices converge to cash values

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Financial Derivatives Contracts
Options

Financial Derivatives Contracts - Options

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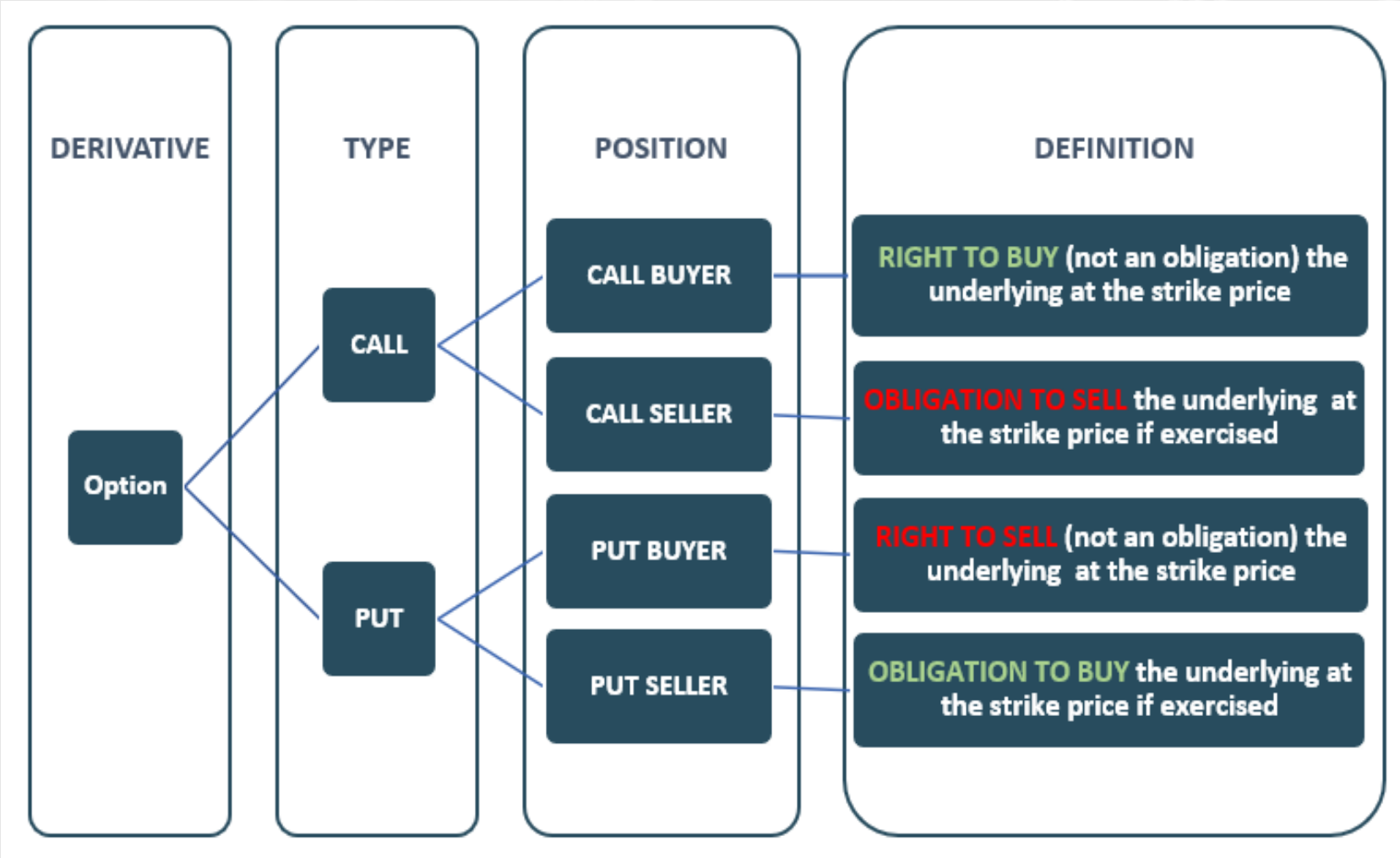

Financial Derivatives Contracts - Options

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- An option contract offers the buyer the right, but not the obligation
  - to buy (call option) or sell (put option) the underlying asset at an agreed-upon price during a certain period of time or on a specific date
  - The agreed upon price is called the strike price
  - Exercising means utilizing the right to buy or the sell the underlying security
  - The choice to exercise implies that a rational holder wouldn't do so unless value is non-negative i.e. profitable
  - Therefore, an option is always an asset to the holder and a liability to the seller.
  - Because the option is an asset with a positive value, you would always expect to pay a premium for it, prior expiry
  - This premium is variable until expiry and depends on the underlying price, volatility and time remaining
- ***American*** options can be exercised any time before the expiration date of the option
- ***European*** options can only be exercised on the expiration date (exercise date) = listed options
- ***Bermudan*** options can be exercised on pre-defined dates = fixed date early expiry
- ***At-the-Money (ATM)*** options have a strike price where the futures are at inception
- ***In-the-Money (ITM)*** options have a profitable strike price where the futures are at inception
- ***Out of-the-Money (OTM)*** options have a strike price compared to where the futures are at inception that would mean they would expire without value if settled immediately

Financial Derivatives Contracts - Options

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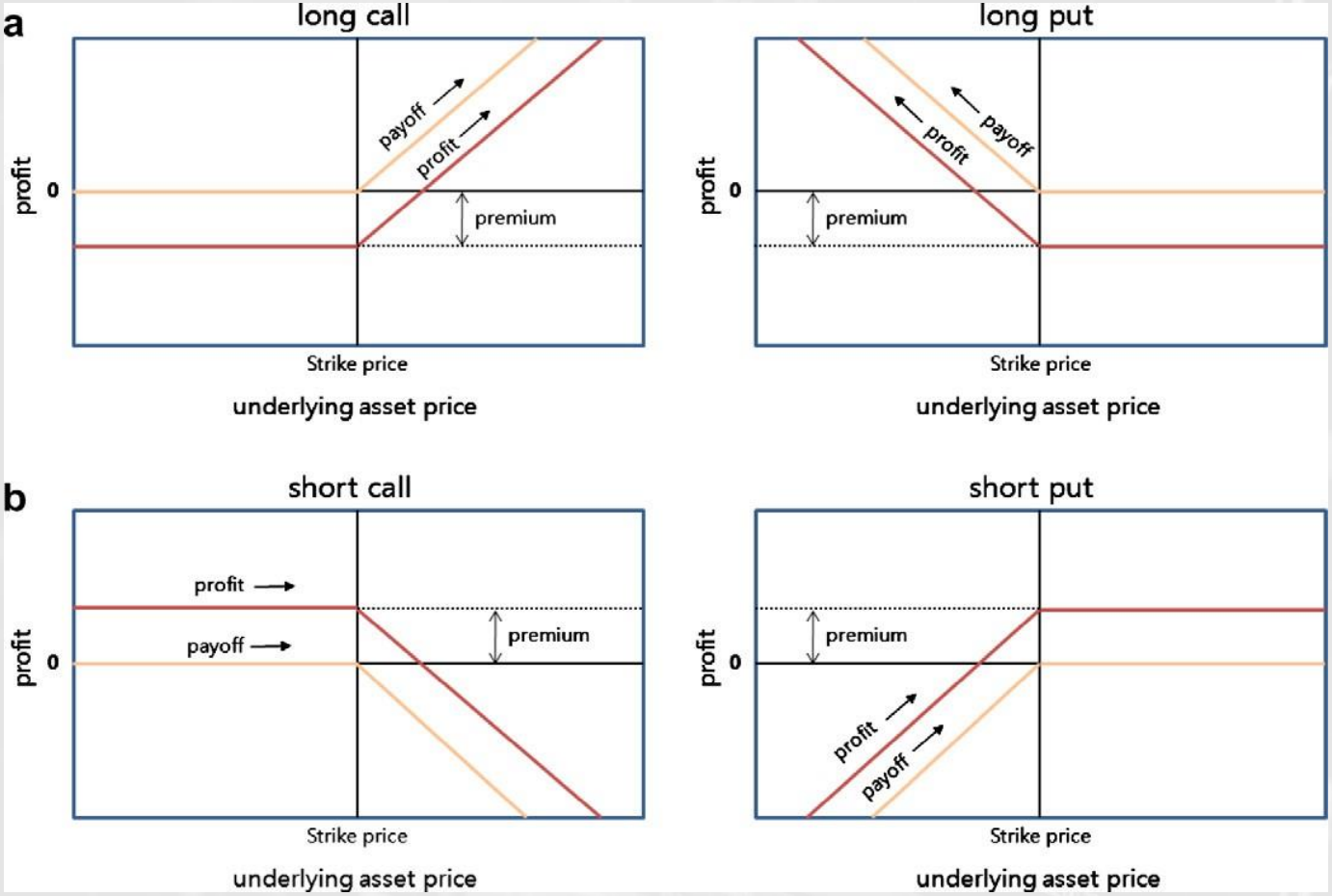

Long Call
Max gain: Unlimited
Max loss: Premium

Long Put
Max gain: Strike - Premium
Max loss: Premium

Short Call
Max gain: Premium
Max loss: Unlimited

Short Put
Max gain: Premium
Max loss: Strike + Premium

Financial Derivatives Contracts - Options

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Basic concepts

Premium = Intrinsic Value + Extrinsic Value

Intrinsic value changes only with underlying price

- Call Intrinsic = Underlying Price – Strike
- Put Intrinsic = Strike – Underlying Price

Extrinsic value changes with all other parameters

- Implied Volatility – "Vega"
- Time Decay – "Theta"
- Interest Rates – "Rho"
- Supply & Demand

The option premium is variable until expiry and depends on the underlying price, volatility and time remaining

- The more price uncertainty, the more the option is worth
- The more volatile the underlying, the more the option is worth (Vega)
- The more time to use the option, the more the option is worth (Theta)

An option can be closed out at any time by unwinding the position by taking the equal and opposite position in the same option, settling the cost for doing so (the market value of the option today)

An option can also be let to naturally expire worthless at expiration date

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Financial Derivatives Contracts
Option - Volatility

Options - Volatility

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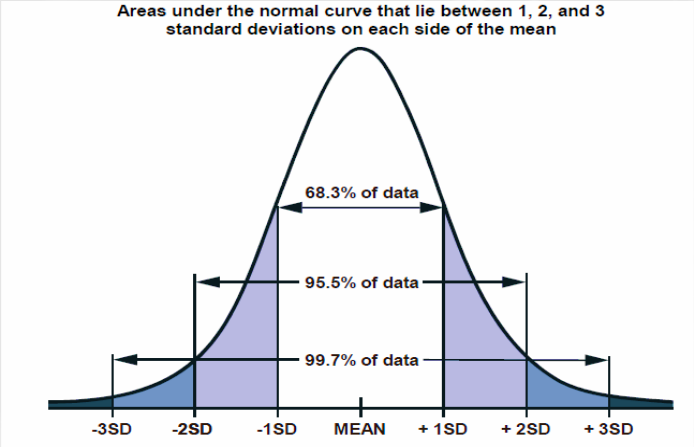
- **Volatility** is a measure of the rate and magnitude of the change of prices (both up and down) of the underlying. When volatility is high, the premium on an option will also be relatively high, and vice versa

- **Historical volatility**, also known as realised or statistical volatility is a measure of the volatility of the underlying futures contract. It is considered known volatility because it is based on actual price changes in the underlying, as it is an annualised standard deviation of past prices moves of the underlying

- **Black & Scholes** defined historical volatility as:

"The standard deviation of the change in the natural logarithm of the underlying price that is expected over the life of the option, expressed as an annual rate, and obtained from a historical time series of underlying prices."



- Plus or minus 1 Standard Deviation from the mean takes in 68.3% of all outcomes
- Plus or minus 2 Standard Deviations from the mean takes in 95.4% of all outcomes
- Plus or minus 3 Standard Deviations from the mean takes in 99.7% of all outcomes

Options – Implied Volatility

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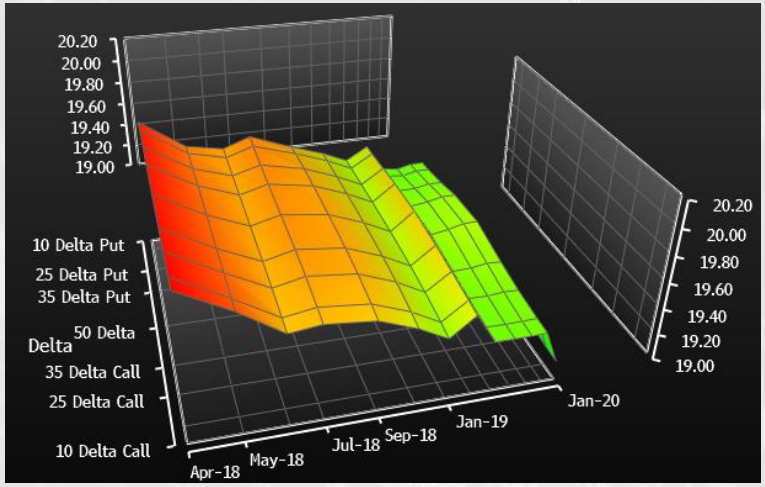
Implied volatility (IV) signals the expected volatility in an options contract over its lifetime

- It is an annualised volatility outputted by an option pricing model, when inputs are known options values in the market in order to calculate the option price
- Usually, ATM option contracts are the most heavily traded in each expiration month. So market makers can allow supply and demand to set the ATM price for ATM option contract
- Once the ATM option prices are determined, implied volatility is the only missing variable that can be solved with simple algebra
- Once the implied volatility is determined for the ATM contracts in any given expiration month, market makers then use pricing models and advanced volatility skews to determine implied volatility at other strike prices that are less heavily traded = Vol Surface



Options – Volatility Skew

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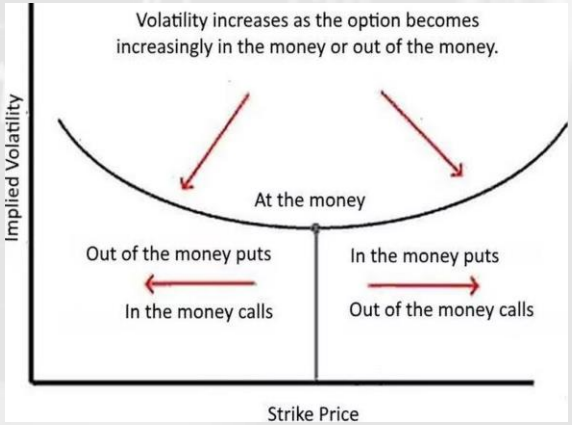
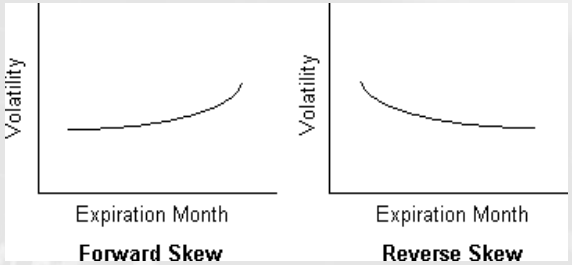
The volatility skew is the difference in implied volatility between out-of-the-money options, at-the-money options, and in-the-money options = *"vertical skew"*

- When ATM options have lower IV than OTM or ITM options the volatility curve is called a "smile" due to the shape the data creates when plotting IV's against strike prices on a chart
- In other words, a volatility smile occurs when the IV for both puts and calls increases as the strike price moves away from the ATM price
- The graph is referred to as a volatility "smile" when the curve is more balanced or a volatility "smirk" if the curve is weighted to one side
- Reverse skews occur when the IV is higher on lower options strikes. It is most commonly seen in index or other longer-term options. This model seems to occur in bear markets and buy puts to compensate for the perceived risks
- Forward-skew IV values go up at higher points in correlation with the strike price
- This is best represented within the commodities market, where a lack of supply can drive prices up like in the agri markets over weather concerns





Options – Pricing

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The Black-Scholes Option Pricing Formula = most used

call option: $c(S,X,r,T,\sigma) := S\cdot N(d_1(S,X,r,T,\sigma)) - X\cdot e^{-r\cdot T}\cdot N(d_2(S,X,r,T,\sigma))$

put option: $p(S,X,r,T,\sigma) := X\cdot e^{-r\cdot T}\cdot N(-d_2(S,X,r,T,\sigma)) - S\cdot N(-d_1(S,X,r,T,\sigma))$

$$d_1(S,X,r,T,\sigma) = \frac{\ln\left(\frac{S}{X}\right) + \left(r + \frac{\sigma^2}{2}\right)\cdot T}{\sigma\cdot\sqrt{T}}$$

where $d_2(S,X,r,T,\sigma) = \left(d_1(S,X,r,T,\sigma) - \sigma\cdot\sqrt{T}\right)$

$N(x) =$ cumulative normal distribution

S = Underlying price
X = Strike price of the option
r = Risk-free interest rate
T = Time to expiration in years
σ = Implied volatility
N(x) = The cumulative normal distribution function

$$C = SN(d_1) - N(d_2)Ke^{-rt}$$

$$d_1 = \frac{\ln\left(S/K\right) + \left(r + s^2/2\right)t}{s\cdot\sqrt{t}}$$

$$d_2 = d_1 - s\cdot\sqrt{t}$$

C = Call premium
S = Current stock price
t = Time until option exercise
K = Option striking price
r = Risk-free interest rate
N = Cumulative standard normal distribution
e = Exponential term

s = St. Deviation
ln = Natural Log

- The Black-Scholes-Merton (BSM) model, is a model of price variation over time that can be used to determine the price of an option
- The model assumes the price of heavily traded assets follows a geometric Brownian motion with constant drift and volatility and assumes the underlying prices follow a lognormal distribution because asset prices cannot be negative (they are bounded by zero)
- Often, asset prices have significant right skewness and some degree of kurtosis (fat tails). This means high-risk downward moves often happen more often in the market than a normal distribution predicts

Options – Pricing: valuations

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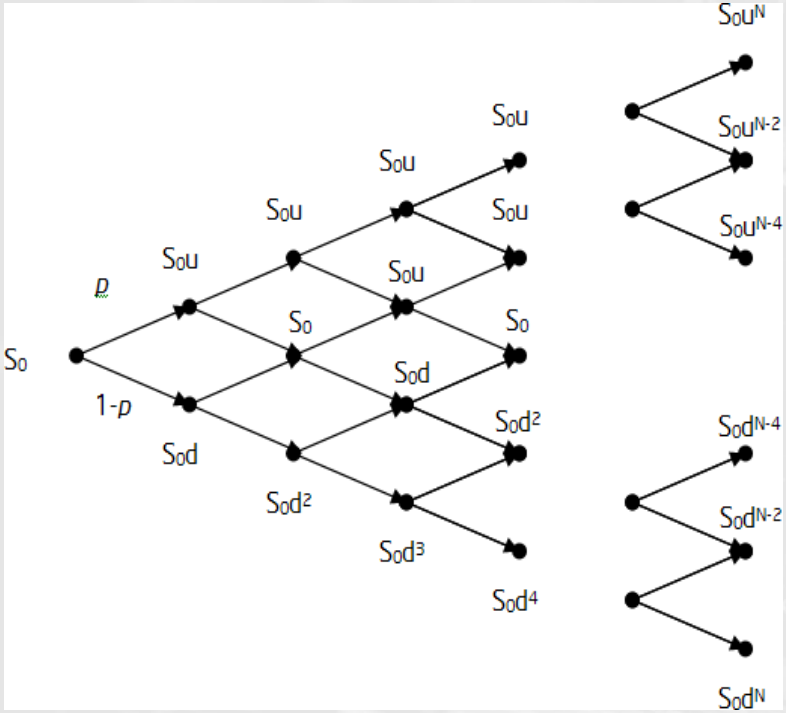
The Binomial Option Pricing Formula = alternative



The binomial option pricing model is an options valuation method developed in 1979. The binomial option pricing model uses an iterative procedure, allowing for the specification of nodes, or points in time, during the time span between the valuation date and the option's expiration date.

- With binomial option price models, the assumptions are that there are two possible outcomes, hence the binomial part of the model. With a pricing model, the two outcomes are a move up, or a move down.
- The major advantage to a binomial option pricing model is that they're mathematically simple. Yet these models can become complex in a multi-period model.

Options – Pricing: valuations

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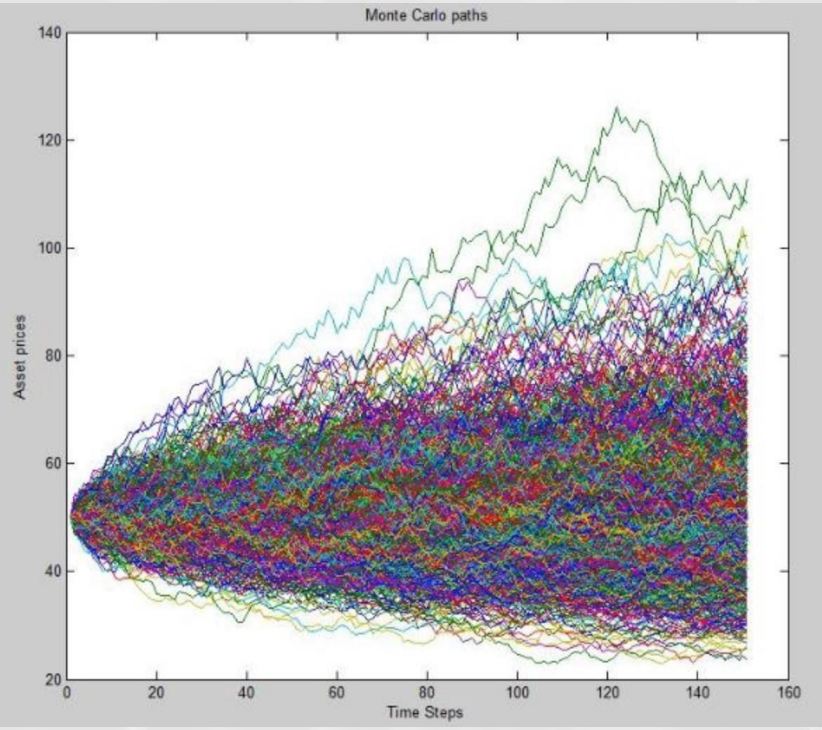
The Monte Carlo Option Pricing Formula = digital alternative



- Monte Carlo simulation is used to model the probability of different outcomes in a process that cannot easily be predicted due to the intervention of random variables. It is a technique used to understand the impact of risk and uncertainty in prediction and forecasting models
- It is a multiple probability simulation and involves the creation of a computer-based model into which the variabilities and interrelationships between random variables are entered
- A spread of results is obtained when the model is run many times – 100s or 1000s.
- The method is very useful when the number of random variables is too high making the analysis using ordinary methods very complex

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Financial Derivatives Contracts
Option - Greeks

Options – Pricing: Greeks

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Unlike futures, options values have more sensitivity than to just an up or down in underlying price. Greeks are theoretical sensitivities of an option to pricing parameters, like price, time, volatility, interest rates and others.

The main ones to consider when offering / trading options are:

- **Delta = sensitivity to Price change in the underlying product**
- **Gamma = sensitivity to the Delta (delta of the delta……)**
- **Theta = sensitivity to Time till expiry**
- **Vega = sensitivity to the Implied Volatility**
- **Rho = sensitivity to a change in risk-free interest rates**

Options – Pricing: Greeks

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- **Delta =** sensitivity to Price change in the underlying product
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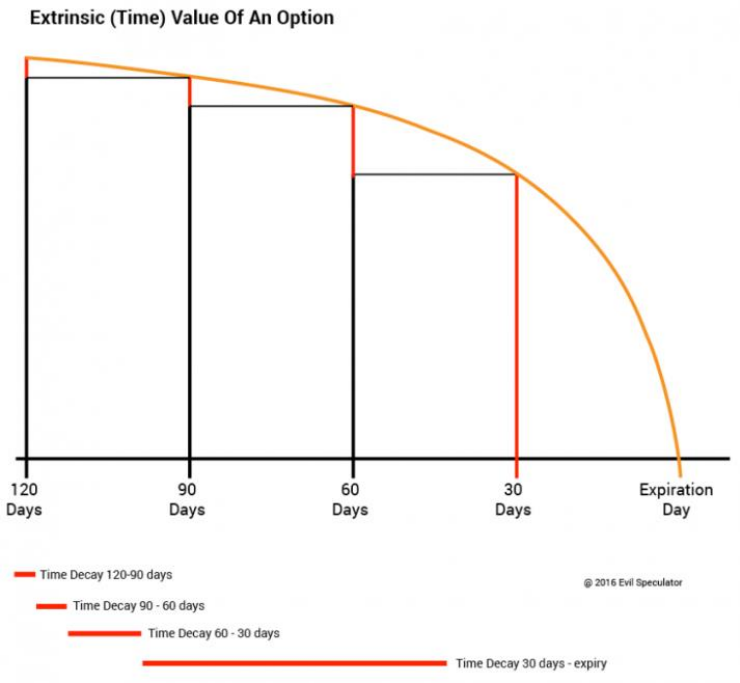

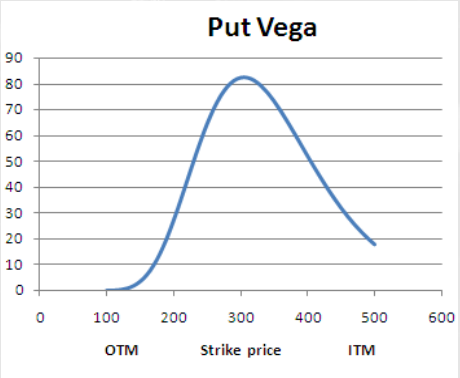

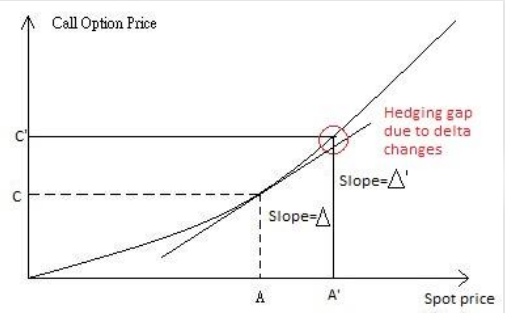

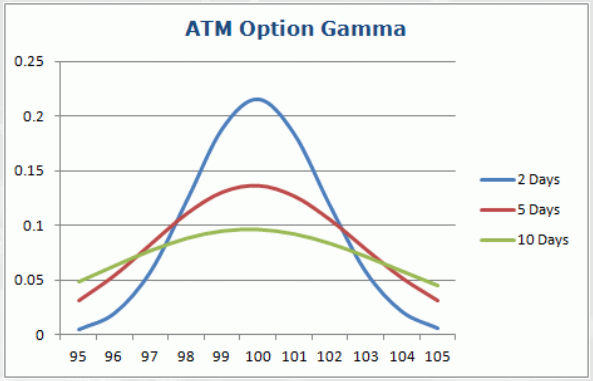

Options – Pricing: Delta

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Delta represents the price sensitivity of the option relative to the underlying futures

- It will give a basic idea of possible gains/losses relative to movements in the underlying price. Delta of a call option has a range between zero and +1, while the Delta of a put option has a range between zero and -1
  - Example, you are long a call option with a delta of 0.50
  - Therefore, if the underlying price increases by $1, the option's price would theoretically increase by 50 cents

Delta will, therefore, indicate the change in the market position (volume hedged) value for a given change in the market price

- This is referred as the hedge ratio, allowing you to hedge suitably to avoid losses on price moves in the underlying futures
  - Example, if you own 100 lots of options and are a long delta of 0.20
  - For every 1 unit move in the underlying, you will need to re-hedge by buying or selling 20 lots

Delta can be seen as the probability of an option expire ITM and thus the corresponding position in the underlying

- Being Long a call will result in positive Delta; being short a call results in negative Delta
- Being Long a put result in negative Delta; being short a put result in positive Delta

Options – Pricing: Delta

PRETB PTE LTD

- Generally, in-the-money options will move more than out-of-the-money options, and short-term options will react more than longer-term options to the same price change in the underlying futures

- As expiration nears, the delta for in-the-money calls will approach +1, reflecting a one-to-one reaction to price changes in the underlying futures

- Delta for out-of the-money calls will approach 0 and won't react at all to price changes in the underlying futures as the likely good for value approaches 0

- As expiration approaches, the delta for in-the-money puts will approach -1 and delta for out-of-the-money puts will approach 0

- Usually, an at-the-money call or put option will have a delta of about .50, or "50 delta" That's because there should be a 50/50 chance the option winds up in- or out-of-the-money at expiration from the time of buying the option (inception)

- Note, just like the cash markets, futures also have Delta of 1, meaning that as futures market prices change, a future position value changes by the same amount "100 delta"

Options – Pricing: Gamma

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Gamma represents the sensitivity of Delta to the underlying price. That is, measures the rate of change between price moves compared to the original Delta.

- Example, you are long one call option on BOZ1
  - The call option has a Delta of 0.50 and a gamma of 0.10
  - Therefore, if BOZ1 increases or decreases by $0.10 the call option's Delta would increase or decrease by 0.01

You can think of gamma as the delta of the delta to show how much you need to hedge

- The best way to interpret Gamma is how much to adjust Delta hedge when the underlying prices change
  - If you are long Gamma you are always gaining on a price move of the underlying
  - Hedging and re-hedging a long option position will result in a profit
  - When longa Gamma, place hedge orders whenever the market is likely to move, such as, over big figures, key data releases (USDA) relevant macroeconomic events, etc

Gamma rent indicates the quantity of the earnings from gamma for one dollar invested in options for one day

- A high gamma rent implies that the premium receiver does not receive sufficient earnings for the costs of the time decay = cheap option. A low gamma rent reflects the fact that the option trader is getting more for less (more gamma and less theta) = expensive option
- It is a risk measure for options which is computed by relating an option's Theta to its Gamma: **Gamma rent = time decay/gamma**

Options – Pricing: Theta

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Theta represents the rate of change between the option price and time, or time sensitivity

- It measures the sensitivity of the option value to passage of time (Gamma rent), by indicating the amount an option's price would decrease as the time to expiration decreases
  - Example, assume you are long an option with a theta of -0.50
  - The option's price would decrease by 50 cents every day that passes up to the expiry date of the option, all else being equal
  - If three trading days pass, the option's value would theoretically decrease by $1.50
- The extrinsic value of an option always decreases with time, so theta is always negative
- For this reason, theta is referred to as the ***time decay*** of an option, reflecting how much an option owner is paying for the optionality of owning the options
- Time value represents uncertainty and this uncertainty decreases the further away the strike price is from ATM
  - Therefore, greatest decay is verified ATM
  - Time pushes OTM options further OTM and ITM options further ITM (increasing Delta to -1 or -1 close to expiry)
- **The price of an option will decay by approximatively Theta x Delta x Time (in days)**

Options – Pricing: Vega

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Vega represents the rate of change between an option's value and the underlying asset's implied volatility (IV)

- This is the option's sensitivity to volatility
  - Vega indicates the amount an option's price changes given a 1% change in IV
  - Example, an option with a Vega of 0.10 indicates the option's value is expected to change by 10 cents if the implied volatility changes by 1%
- As the option value increases with increases in volatility, the Vega of a vanilla option is, therefore, always positive
- The more time left to expiry, the more Vega an option will have
- It is largest ATM, but OTM and ITM options don’t gain much from an increase in implied volatility

Options – Pricing: Rho

PRETB PTE LTD

Rho represents the rate of change between an option's value (price) and a change in the achievable risk free interest rates in the market you are active

- Rho measures sensitivity to the risk free interest rates (generally government bonds)
  - Example, assume a call option has a Rho of 0.05 and a price of $1.25
  - If interest rates rise by 1%, the value of the call option would increase to $1.30, all else being equal (and for a put option the price would drop to $1.20)
  - Changing interest rates shouldn't affect the value of shorter-tern options too much
  - But if you are trading longer-term options such as some of the producers are looking to own currently with the recent super high prices, Rho can have a much more significant effect due to greater "cost of carry"

Our session today

Part I

Why Hedge? Why Now?

Natural Risk Exposure

Futures Markets

Options Basics

Premium

Part II

Historical Volatility And Implied Volatility

Greeks

Options Strategies

Soy / Palm Oil Derivatives

Conclusions

Options – Pricing: Example

PRETB PTE LTD

Greeks are not static

- Options lose time value every day, as Greeks change with time, underlying price, implied volatility. Even when price and volatility don't move, the sensitivities are fluctuating
- It is important to understand they do not operate independently but move and adjust dynamically with changes in market conditions
- Some other Greeks, which aren't discussed as often, are Lambda, Epsilon, Vomma, Vera, Speed, Zomma, Color, Ultima
- When looking at options we should consider **risk-neutral probabilities** as pricing is never perfect, and in the real world never risk-free thus trading options gives opportunities
  - The risk-neutral probability is the probability of future outcomes adjusted for risk
  - There are two main assumptions behind this concept:
    - The current value equals to its expected payoff discounted at the risk-free rate
    - There are no arbitrage opportunities in the market
  - Option pricing uses this theoretical value measures the probability of buying and selling the assets as if there was a single probability for everything in the market
  - However, we neither assume that all the investors in the market are risk-neutral nor the fact that risky assets will earn the risk-free rate of return at all times easily

Options – Pricing: Example

PRETB PTE LTD

Let's look at an Soybean example with the following parameters:

- CME Soybean Futures
- Futures ref. price = 980
- 1000 Call price = 12
- Delta = 40
- Gamma = 0.50
- Theta = 0.20
- Vega = 0.10
- Volatility = 15%

If market goes to 1000 (up 20 points) in 2 weeks and volatility drops to 14% (down one point) what is the resulting premium of the option?

- Delta: The effect on the option's premium from delta alone would be: 0.40 x 20 = 8 points
- Gamma: To calculate the delta effect due to gamma, we multiply the gamma of 0.50 times the 20-point move, giving us 10 additional delta: 0.50 x 20 = 10 points
  - This changes the options delta from 40 to 50
  - Roughly, with the initial delta at 40, we would expect 8 points of change across the 20-point move, but due to the Gamma the new delta of 50 would generate a premium change of 10
  - Across the 20-point move, the delta changed from 40 to 50, therefore we take the average, 45 as we expect it to have moved during the period
  - Average delta over the 2 weeks = 45, price change is 20, price change = 45% * 20 = 9
  - This will contribute 9 points to the option's new premium (but this is not all!)

Options – Pricing: Example

PRETB PTE LTD

Let's look at an Soybean example with the following parameters:

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- Theta = 0.20
- Vega = 0.10
- Volatility = 15%

If market goes to 1000 (up 20 points) in 2 weeks and volatility drops to 14% (down one point) what is the resulting premium of the option?

- Delta + Gamma contribute 9 points to the option's new premium
- Theta, or time decay, multiply the theta value of 0.20 times 14 days: 0.20 x 14 = -2.8
- Vega effect, multiply the vega metric by the change in volatility: Vega of -1 x 0.10 = -0.1
- Rho effect, no change in interest rates has been discussed: 0

Now we can add those values to get our new option price on t+14:

- New option premium = Old option premium + Δ delta + Δ theta + Δ Vega =
- Very indicative as value = 12 + 9 + (-2.8) +(-0.1) = 18.10

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What ever you do, just use Quickstrike

PDF

Option Calculators

CME Calculator | Universal Calculator | + Expiration | Start Over

OZLZ1 26/11/2021	STRIKE	TYPE	FUTURE	DAYS	RATE (%)	MODEL ACTIONS
	57.5	Call	56.95	189.70	0.14	

SETTLE	PRICE		VOL (%)	DELTA	GAMMA	VEGA	THETA
Price: 5.55	5.27		33.80	53	2.850	0.163	-0.015
Vol: 33.85	5.27		33.80	53	2.851	0.163	-0.015

Quickstrike

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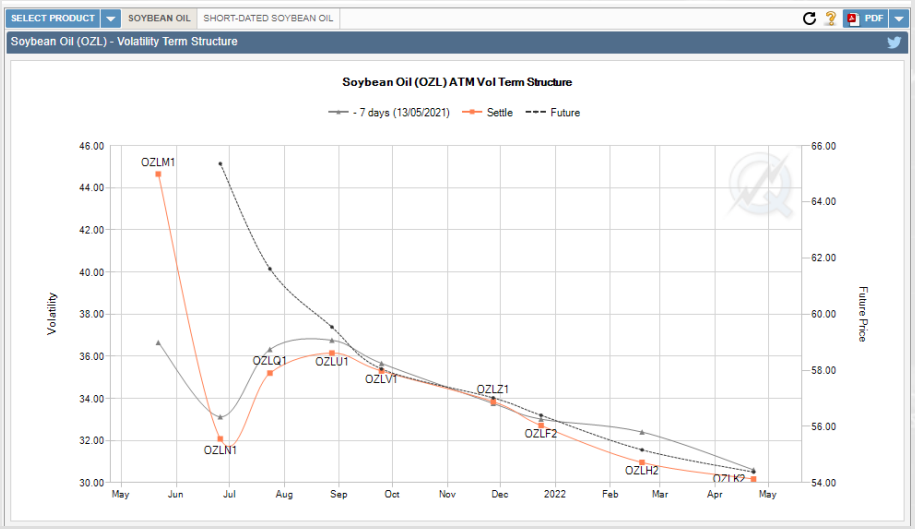

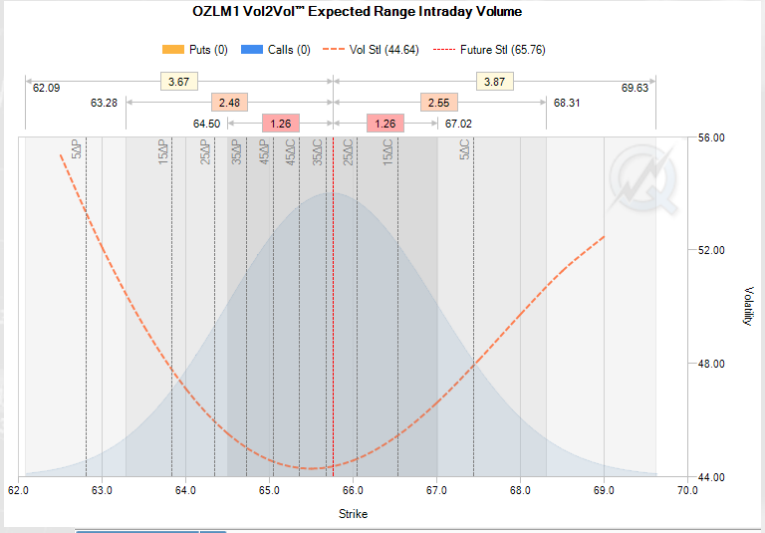

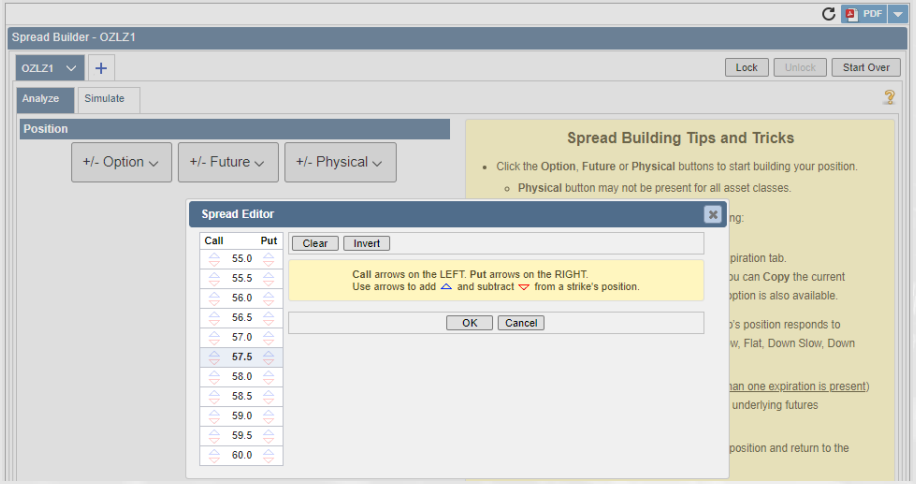

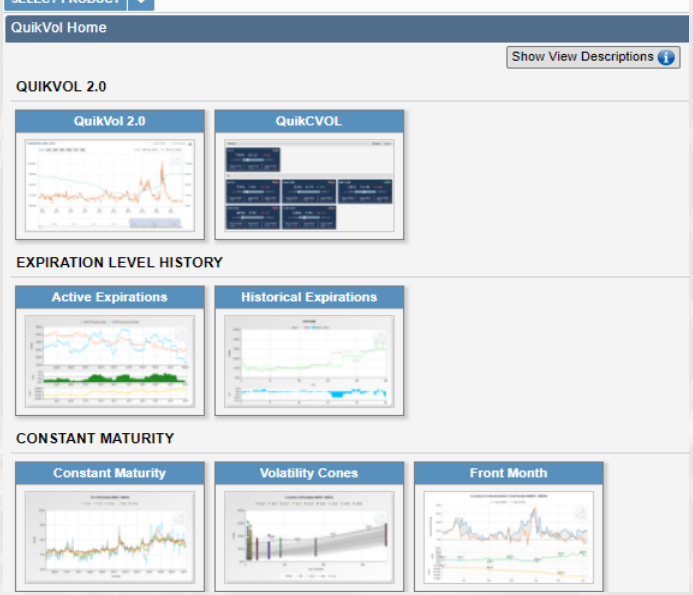

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Financial Option Strategies
Asian Clients
Edible Oils (BO, POX)

Strategies for Asian Clients

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The main considerations when offering / trading options are:

- Strategies based on the direction of the market - everyone
- Strategies based on volatility – MNC's and serious traders only
- Good strategies to hedge a physical position – most consumers, some producers
- Strategies implying a bullish or bearish bet – everybody loves to take a punt

The core fundamental rationales to consider when offering ideas:

- Pricing tools are rudimental if at all present (generally at best an excel sheet)
- The downside risk on selling options is rarely considered seriously, they see it as income
- Leverage is not offered, nor fully understood so try to keep it relatively vanilla/simple
- Owners, promoters and shareholders generally don't see the value of a hedge in tandem with the underlying risk, but as separate trades = trouble
- Companies are often poorly capitalized, so margin calls are hard to get

Interesting Strategies for Asian Clients

PRETB PTE LTD

Example ideas that are traded regularly in the edible oil space

- **Available for both producers and consumers**
- **From basic vanilla to more complex are described in the coming pages**
- **Try to get to a zero upfront costs structure if you want to get your clients to buy them**

Directional Trades

1. Futures (swaps)
2. Buying a Call
3. Buying a Put
4. Put Spreads

Physical Cargo Hedge Trades

5. Fences
6. (Zero Cost) Collars
7. Three Ways
8. Ratio Three Ways

Volatility Trades

9. Straddle
10. Strangle

Note: in the OTC markets there are an almost unlimited amount of ideas possible, but

- These are generally not very well developed in the edible oils space (yet) for SBO and the palm oil complex
- They are with bilateral risk, so financing is included = different from listed options
- Example about leveraged structures, composite structures and spread options

Directional trades: Futures

PRETB PTE LTD

Objective

- To lock in a forward fixed price for a commodity

Description

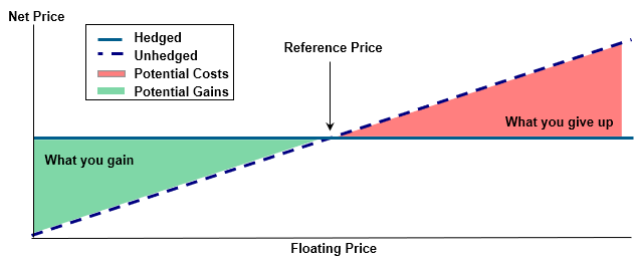
- Producer locks in a fixed price on a fixed volume of a commodity over a predetermined period of time by selling futures
- At the end of each observation, the settlement price (as designated in the trade confirmation) is compared to the futures price
  - If the settlement price < the swap price, Producer receives the difference between the settlement price and the futures price
  - If the settlement price > the swap price, Producer pays the difference between the futures price and the settlement price

Advantages

- Producer locks in a commodity price over a time period and is protected from any price decrease below the futures price
- This structure requires minimum monitoring cost

Disadvantages

- Producer loses the potential gain from upside price moves above the futures price



Directional trades: Buying a Call

PRETB PTE LTD

Objective

- To protect against price increases in Input Price by paying an up-front premium

Description

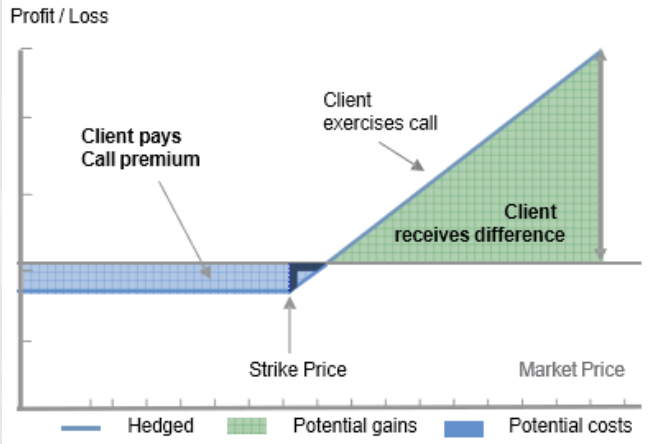
- Client creates a cap price in exchange for upfront premium, which reflects the likelihood that the option will be exercised
- The settlement price is compared to the call strike price
  - If the settlement price is higher than the strike price, Client receives the difference between the strike price and settlement price
  - If the settlement price is below the call strike, the options expire worthless

Advantages

- Client participates fully in downward price movements while protecting against price increases above the call level

Disadvantages

- There is an up-front premium associated with this strategy



Directional trades : Buying a Put

PRETB PTE LTD

Objective

- To protect against downward price moves by paying an up-front premium

Description

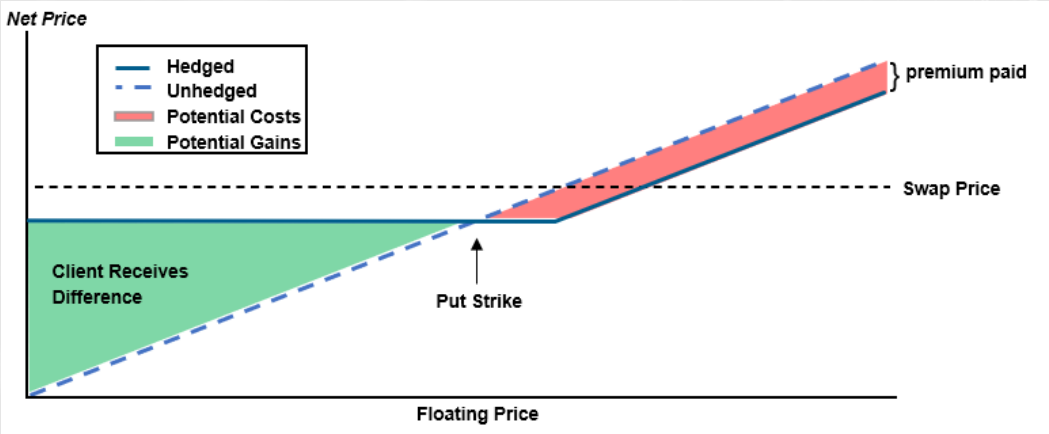
- Client creates a floor price in exchange for upfront premium, which reflects the likelihood that the option will be exercised
- The settlement price is compared to the put strike price
  - If the settlement price is lower than the strike price, Client receives the difference between the strike price and settlement price
  - If the settlement price is above the call strike, the options expire worthless

Advantages

- Client participates fully in upward price movements while protecting against price decreases below the put level

Disadvantages

- There is an up-front premium associated with this strategy



Put options are often compared to buying insurance.
With the purchase of a put, the minimum sale price of the underlying commodity is known in advance.
Producer is allowed to participate 100% in upside price moves above the put strike

Directional trades: Put Spreads

PRETB PTE LTD

Objective

- To hedge at lower cost and still retain some benefit from higher prices

Description

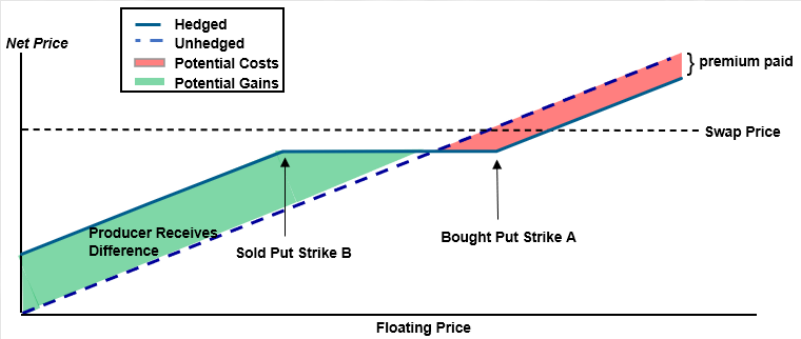
- A Producer buys a ATM or ITM put option (A) and partially financing it by selling a OTM put option (B) with a lower strike price for the same time period at lower upfront cost, thus creating a put spread. Also called a Bear Put Spread
- At the option expiry, the settlement price compares to the strike levels of the puts
  - If the settle < B, the Producer receives the difference between the put strikes
  - If the settle B<X<A, Producer receives the difference between A and B
  - If the settle > B, Producer pays the difference between settle and A

Advantages

- Lower upfront cost method of hedging against downward price moves while maintaining some upside participation

Disadvantages

- If the market price falls below the lower put strike, Producer will be buying at the lower put strike B



Put Spreads are best in generally bearish markets for producers. Of course they can also be structured for calls in the case of consumers. Selling the cheaper put with strike B helps to offset the cost of the put you buy with strike A. That ultimately limits your risk, but also reduces your upside.

Physical hedges: Fences

PRETB PTE LTD

Objective

- To hedge at exposure to the downside (producer) / upside (consumer)

Description

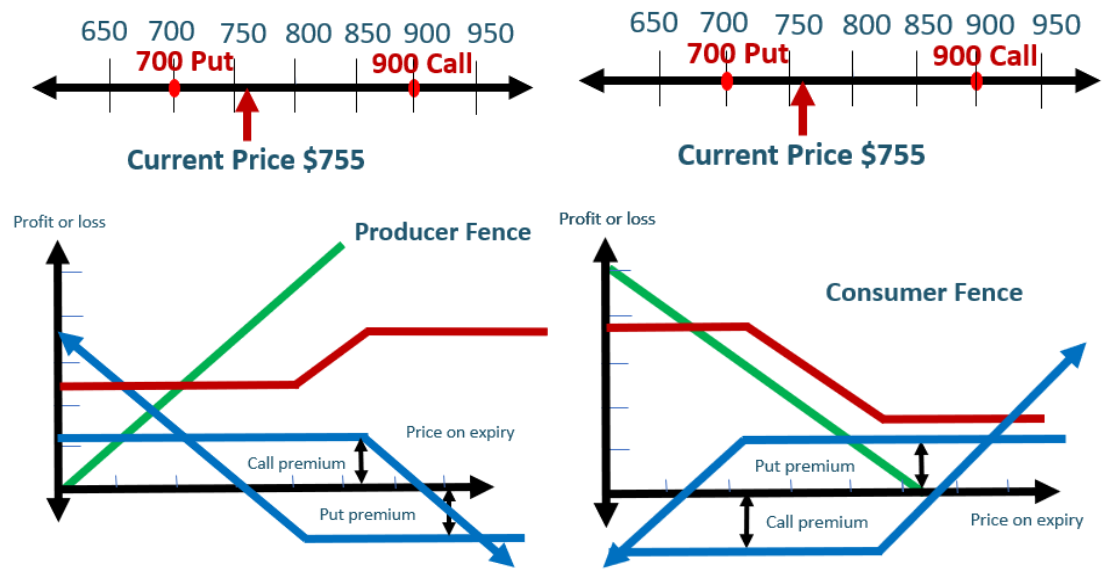
- A Producer buys an OTM Put option and at the same time sells an OTM Call option
- A Consumer buys an OTM Call options and at the same time sells an OTM Put option
- At the option expiry, the settlement price compares to the strike levels of the options

Advantages

- Lower upfront cost by selling part of the options, less capital intensive than futures
- Can be used to reduce the price risk of physical positions

Disadvantages

- Relatively complex way to hedge your physical long/short as less liquid than futures



Physical Cargo Hedges: Collars

PRETB PTE LTD

Objective

- To hedge at zero cost and still retain some benefit from higher prices (producer)

Description

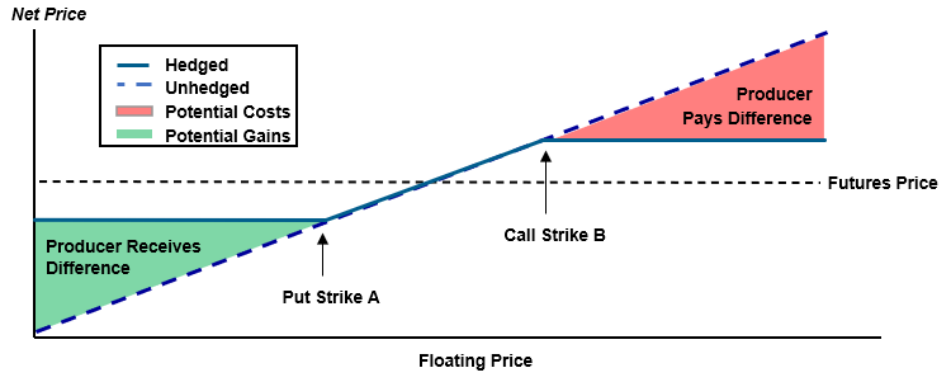
- A Producer buys an OTM Call option (B) and finances it by selling an OTM Put option (A) for the same time period at zero upfront cost
- At the option expiry, the settlement price compared to the strike levels
  - If the settle < A, Producer receives the difference between the settle and A
  - If the settle > B, Producer pays the difference between B and the settle
  - If the settle A<$<B is between the put and call strikes, no payments are made

Advantages

- Lower upfront cost method of hedging against downward price moves while maintaining some upside participation

Disadvantages

- If the market price rises above the call strike, Producer will be selling at the call strike
- Producer has price exposure from the current swap level to the put strike



A zero premium collar allows a Producer to hedge without paying an upfront premium.
Unlike a traditional swap, it offers Producer the ability to take partial advantage of favourable upward price movements.

Physical Cargo Hedges: Three ways

PRETB PTE LTD

Objective

- To hedge at zero cost and still retain some benefit from higher prices (producer)

Description

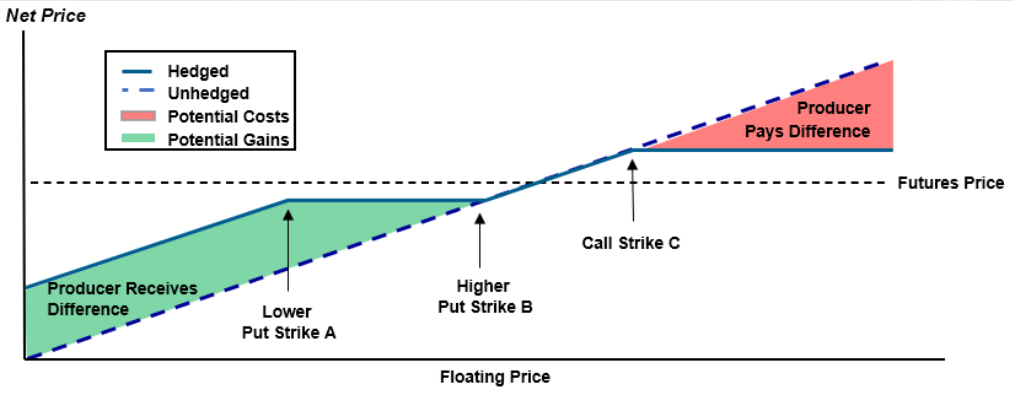
- Producer buys an ATM Put (or nearly at-the-money) and sells an OTM Put to create a put spread and combines this with selling an OTM call to finance the put spread.
- The total premium paid is zero for this combined structure
- Result: the Producer is protected by the value difference between the put strikes A & B at levels below A, but participates in upside price moves to the call strike level C

Advantages

- Producer participates in upside price moves up to the call strike C
- If the market falls between put strikes, Producer is selling at the higher put strike B

Disadvantages

- Producer sells at the call strike C on price moves above the call strike C (=cap)
- If the market falls below the lower put strike A, Producer is selling at settlement price plus the difference between the two put strikes A & B



A Three-Way allows a Producer to participate in higher levels than a traditional zero premium collar would allow.
However Producer is only partially hedged for levels below the lower put strike.

Physical Cargo Hedges: Ratio Three ways

PRETB PTE LTD

Objective

- To hedge at zero cost and still retain some benefit from higher prices (producer)

Description

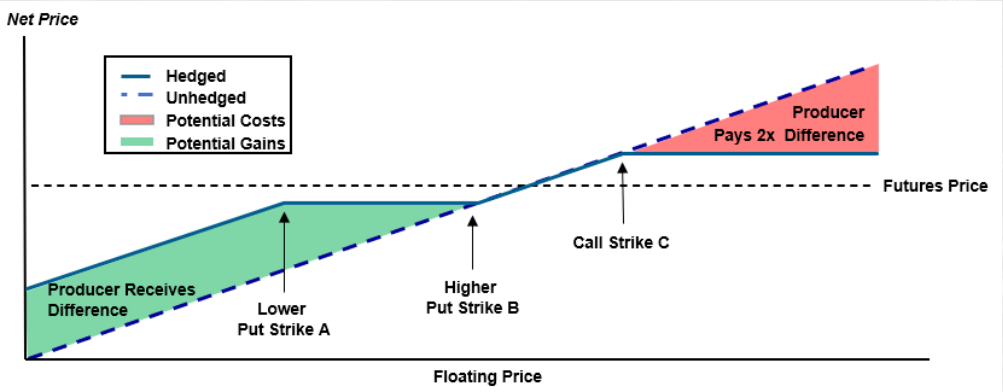
- Producer buys an ATM Put (or nearly at-the-money) and sells an OTM Put to create a put spread and combines this with selling 2X an OTM call to finance the put spread.
- The total premium paid is zero for this combined structure
- Result: the Producer is protected by the value difference between the put strikes A & B at levels below A, but participates in upside price moves to the call strike level C

Advantages

- Producer participates in upside price moves up to the call strike C
- If the market falls between put strikes, Producer is selling at the higher put strike B

Disadvantages

- Producer sells x2 the volume at level C when price moves above the call strike C
- If the market falls below the lower put strike A, Producer is selling at settle plus the difference between the two put strikes A & B



A Ratio 3-Way allows a Producer to participate in higher levels than a traditional zero premium collar would allow.
However Producer is only partially hedged for levels below the lower put strike.

Volatility Trades: Straddles

PRETB PTE LTD

Objective

- To participate in the change in volatility of the underlying commodities

Description

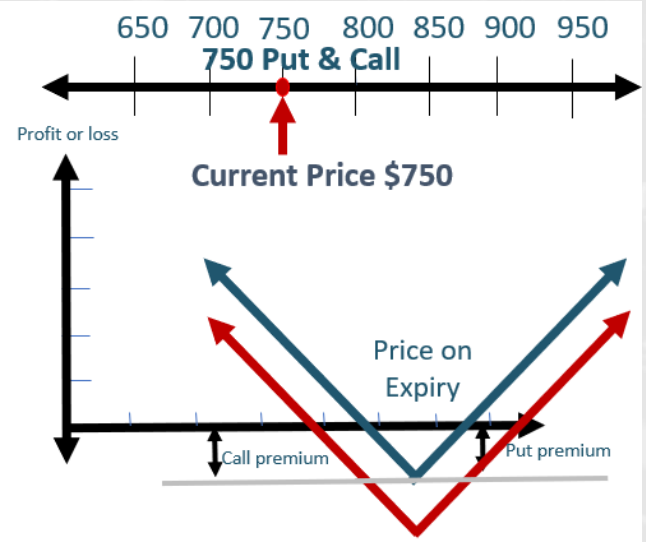
- Buy both an ATM Call and an ATM Put simultaneously
- With the same strike, same maturity and same volume

Advantages

- Risk is capped to the premium paid for both options
- Reward is uncapped (unlimited for the Call, at strike value for the Put)
- Great when you expect IVOL to go up (ahead of planting reports and in weather markets) or to trade for short dates goals (weekly options)

Disadvantages

- Quite expensive due to the cost of both option premiums at inception



Volatility Trades: Strangle

PRETB PTE LTD

Objective

- To participate in the change in volatility of the underlying commodities

Description

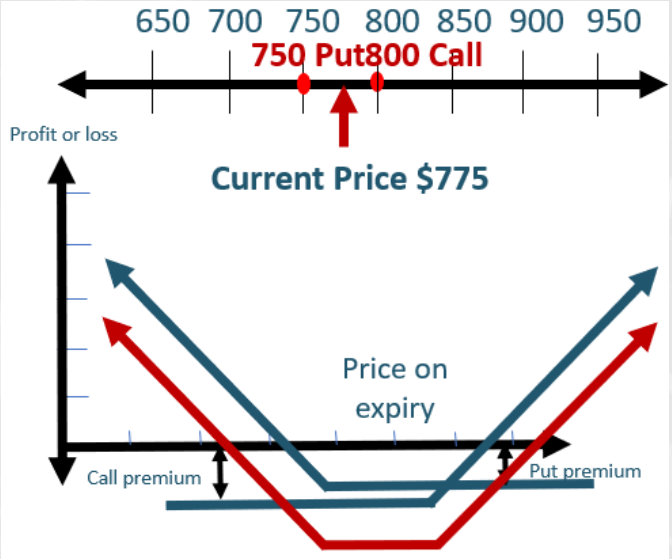
- Buy both an OTM Call and an OTM Put simultaneously
- With different strikes, but with the same maturity and the same volume

Advantages

- Risk is capped to the premium paid for both options, but cheaper than Straddles
- Reward is uncapped (unlimited for the Call, at strike value for the Put)
- Great when you expect IVOL to go up (ahead of planting reports and in weather markets) or to trade for short dates goals (weekly options)

Disadvantages

- Quite expensive due to the cost of both option premiums at inception



Live examples 21-5-2021 @ BOZ21

PRETB PTE LTD

Time GMT +7, 14.00pm Ref $57.50 BOZ 2021

Directional Trades

1. Futures (swaps)
$57.49, IV 33.80, Δ1
G 0.0, V0.0, T0.0

2. Buying a +57.5 Call
$5.55, IV 33.85, Δ0.55
G 2.181, V0.164, T -0.015

3. Buying a +57.5 Put
$5.61, IV 33.85, Δ-0.45
G 2.189, V0.164, T -0.015

4. Put Spread +57.5/-52.5
$2.49, IV 33.48, Δ-0.14
G 2.386, V0.155, T -0.014

Physical Cargo Hedge Trades

5. Producer Fence
+52.50P / -60.00C
-$1.48, IV 32.08, Δ-0.78
G2.935, V0.117, T -0.013

6. Producer Collar
-52.50P / +60.00C
$1.48, IV 33.14, Δ0.78
G2.847, V0.117, T -0.013

7. Three Ways
+52.50P / -55.00P / +60.00C
$3.29, IV 32.50, Δ0.55
G2.018, V0.92, T -0.079

8. Ratio Three Ways
+52.50P / -55.00P / +61.00C
$2.92, IV 32.76, Δ0.5
G2.018. V0.91, T -0.079

Volatility Trades

9. Straddle 57.50 BOZ1
$11.15, IV 33.85, Δ0.09
G 5.638, V0.327, T -0.029

10. Strangle
+52.50P / +60.00C
$7.69, IV 33.80, Δ0.16
G5.387, V0.155, T -0.029

Executing Options with CME Group

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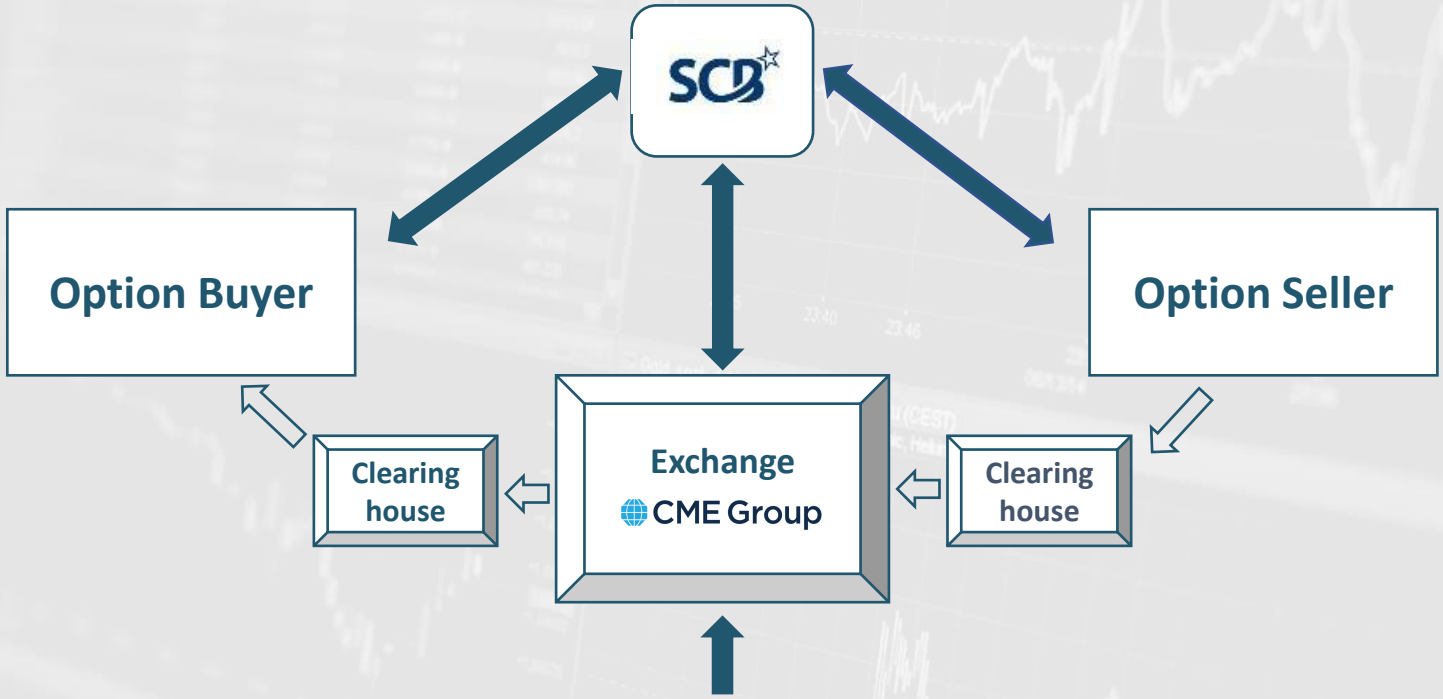

- Anonymous transactions
- No counterparty but exchange Risk exposure only
- Can be created and advised by SCB
- Easy to create, execute and manage
- Validation, valuation via Quickstrike

Executing Options with CME Group

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Non-Standard Agricultural Options

Short-Dated New Crop Options

Weekly Options

Calendar Spread Options

Palm Oil Product Slate

CLEARING	GLOBEX	FLOOR	CLEARPORT	PRODUCT NAME	EXCHANGE	PRODUCT GROUP	SUBGROUP	CATEGORY	SUBCATEGORY	CLEARED AS
CPC	-	-	CPC	Malaysian Palm Oil Calendar Swaps	CME	Agriculture	Grain And Oilseed	-	-	Cleared Swaps
CPO	CPO	-	CPO	USD Malaysian Crude Palm Oil Calendar Futures	CME	Agriculture	Grain And Oilseed	-	-	Futures
OPS	-	-	OPS	USD Malaysian Palm Olein Calendar Swaps	CME	Agriculture	Grain And Oilseed	-	-	Cleared Swaps
POG	POG	-	POG	Bursa Malaysia Crude Palm Oil - Gasoil Spread Futures	CME	Agriculture	Grain And Oilseed	-	-	Futures
OPF	OPF	-	OPF	USD Malaysian Palm Olein Calendar Futures	CME	Agriculture	Grain And Oilseed	-	-	Futures
POX	POX	-	POX	USD Malaysian Crude Palm Oil Day 10th Financial Option	CME	Agriculture	Grain And Oilseed	-	-	Options
POO	POO	-	POO	USD Malaysian Crude Palm Oil Average Price Options	CME	Agriculture	Grain And Oilseed	-	-	Options
CPV	CPV	-	CPV	USD Malaysian Crude Palm Oil Day 15th Bullet Futures	CME	Agriculture	Grain And Oilseed	-	-	Futures

Conclusions on Options for Edible Oil players

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- All options strategies presented before are just samples of some of the ideas possible
- Clients generally want to have limited cash out, and need some advice on what/why to buy
- Brokers can add value by commenting not just on today's prices, but more on expected iVol ranges and price moves
- Managing risk with options is easy IF you know what you are doing. Brokers can add value by managing a portfolio on behalf of clients and charge for it
- Don't try to calculate values in an excel sheet, use Quickstrike or other platforms for it
- Longer dated options, often only trade OTC with the bigger producers, so getting close to them adds value to your client base
- The overall goal is to reduce your clients exposure to price risk, not perse as revenue source
- Short term seasonal risks are fantastic reasons to trade options (Christmas rally, POC rally, Monsoon Madness, all USDA/MPOB reports)
- Some players like Wilmar to buy physical and sell ITM Puts against it to reduce their purchase price while being longer if the markets down and unchanged if it moves up

reshaping the face of markets

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Important Disclosures