BURSA MALAYSIA

Introduction to Options

Agenda

- Options Basics
- Contract Specification
- Basic Strategies

What is an Option?

	RIGHT	OBLIGATION
Buyer	✓	x
Writer	x	✓

Specific

- Asset
- Price
- Time

Exercise Type

American style options

Allows the options buyer to exercise at ANYTIME before the expiration date

European style options

Allows the options buyer to exercise at Expiration

Options Terminology

- **Call option**
  - Owner of the option has the right but not the obligation to buy the underlying asset at a specified price up to or at a specified date
- **Put option**
  - Owner of the option has the right but not the obligation to sell the underlying asset at a specified price up to or at a specified date
- **Buyer/holder/owner**
  - Party who pays a price (the option premium) to acquire the option
- **Writer/Seller**
  - Party who sell (or writes) the option and receives a price for doing so

Underlying Instrument

- The underlying instrument is the instrument which is bought or sold when an option is exercised.
- The underlying instrument for OKLI is the **FBM KLCI Futures (FKLI)**
- The underlying instrument for OCPO is the 3rd Month **FCPO** contract

Specification of an Options Contract

- **Expiry Date**
  - last date option holders can exercise their right

- **Exercise Price (or Strike Price)**
  - the fixed price, at which an option give the right to call (purchase) or put (sell) the underlying asset

- **Premium**
  - paid by buyer to acquire the right of the option; received by seller for giving the right

Options Premium

Options Premium = **Intrinsic Value** = The difference between Strike Price and Underlying Price

\+

Time Value = The difference between the option price/premium and the intrinsic value.

Also known as speculative/hope value.

At expiration, the time value falls to zero.

Options Premium

- The option premium is the amount which the holder pays for the option
- It is also the amount the option writer receives.

Example

- A September 12 1660 Call Option with a premium of 18.0
- BUY 1 OKLI* SEP12 1660 Call @ 18.0

- The holder will pay 18.0 X RM50 = RM900 to the seller for the call option.

Options Premium - Factors that affect Option Price

Increase in :	Price of Call	Price of Put
↑ Underlying Futures Price	↑	↓
↑ Strike Price of the Option	↓	↑
↑ Interest Rates (r_f)	↑	↓
↑ Expected Volatility of Underlying	↑	↑
↑ Time to Expiration	↑	↑

http://www.bursamalaysia.com/website/bm/bursa_basics/investing_basics/opc.html

Option Series & Exercise Price Intervals

- **Option Series**
  - Options of the same class (put & call) having the same exercise price & expiration date
  - At the start of trading daily, there shall be at least
    - in-the-money series,
    - out-of-the-money series,
    - and an approximate at-the-money series
  - for each contract month of both the Call Options and Put Options

- **Exercise Price Intervals**
  - 10 index points intervals for the first two contract months and 20 index points intervals for the next/last two contract months for OKLI
  - RM50 intervals for all OCPO contract months

Option Series Creation - Price Movement

Example : Assuming there are only 3 contract series

- **FKLI is trading at 1560**
- **Exercise Price Intervals are 20 points**
- **Outstanding exercise prices for Calls and Puts for all expiration months: 1540, 1560 & 1580**

The underlying index moves to 1581
New series will be created with exercise price of 1600

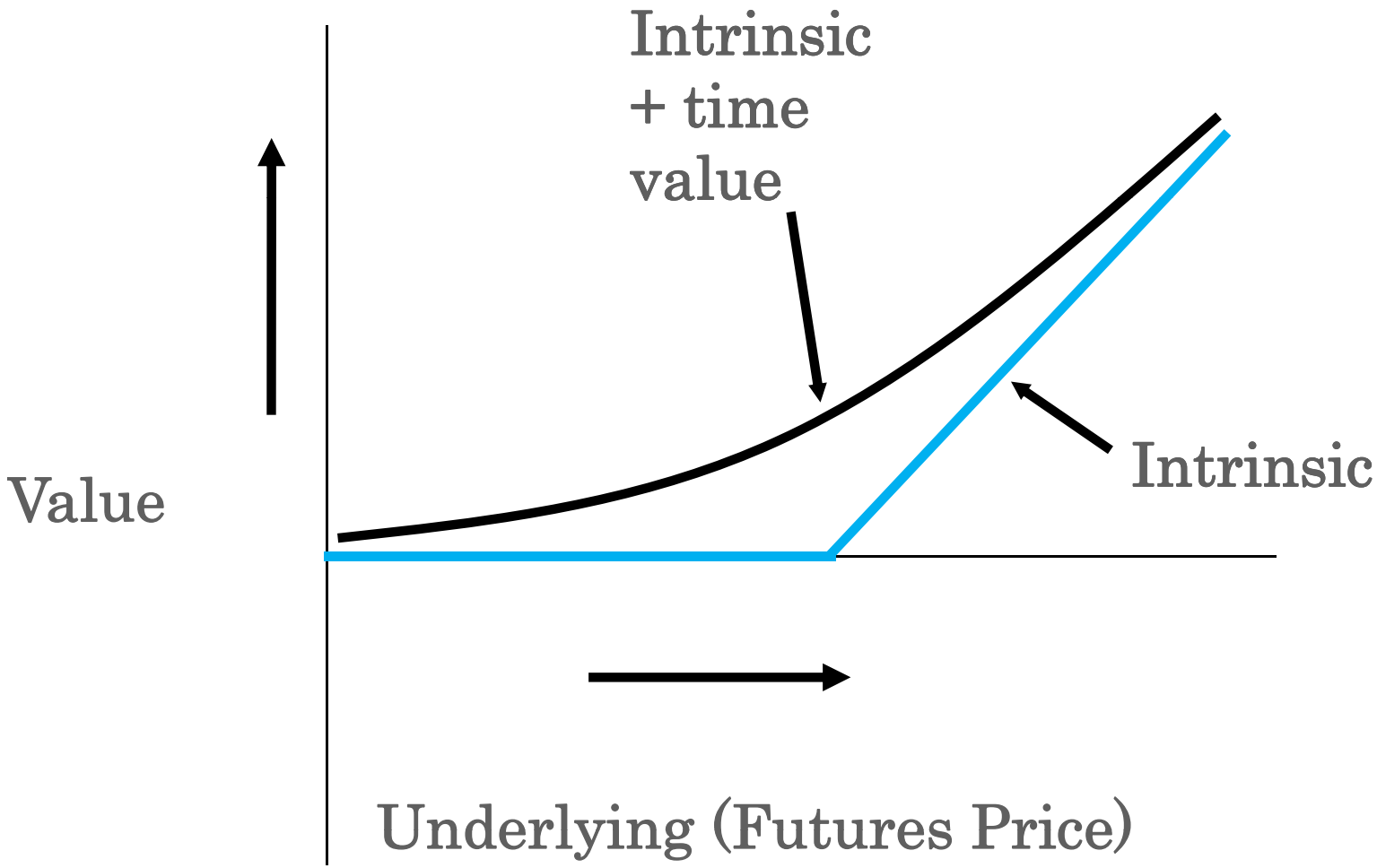
FKLI - 1581

EXERCISE PRICE	CALL	PUT
1540	In-the-money	Out-of-the-money
1560	In-the-money	Out-of-the-money
1580	At-the-money	At-the-money
1600 (NEW)	Out-of-the-money	In-the-money

Options Terminology

	CALL	PUT
In the money	Market > Strike 1620 > 1600	Market < Strike 1588 < 1600
At the money	Market = Strike 1600 = 1600	Market = Strike 1600 = 1600
Out the money	Market < Strike 1588 < 1600	Market > Strike 1620 > 1600

Buy Call Option P&L Diagram



When options are exercised / assigned:

	CALL	PUT
Buyer Exercised	long position	short position
Seller Assigned	short position	long position

Why Buy Options?

- know the maximum potential loss and investment cost
- for a fraction of the asset's cost, the premium gives exposure to price movements at a similar ratio
- can participate in price movements without disturbing underlying portfolio

Uses of Options

Risk management tools:

- Portfolio protection
- Management of Cashflow
- Asset Allocation
- Income enhancement

Portfolio Protection

A fund manager runs a diversified portfolio. He is concerned that the equity market might fall. If this happens, he may have to liquidate the entire portfolio for alternative investment

Possible strategies:

- Sell index futures
- Buy index put options

Management of Cashflow

A pension fund manager expects to receive clients' funds in two months' time. He fears that the market may rise before he can invest the funds and this might adversely affect his fund's performance

- Possible strategies:
  - Buy index futures
  - Buy index call options

Asset Allocation Decisions

A fund manager has a portfolio invested across equities, bonds and cash in the ratio of 45:40:15. He decides to adjust this ratio to 55:30:15.

- Alternative methods:
  - Adjust cash instruments
  - Buy index futures or options contracts and sell bond futures. Unwind these positions gradually

- Benefit – quicker and cheaper

Income Enhancement

Already owning the stock

- receive dividend flow at intervals

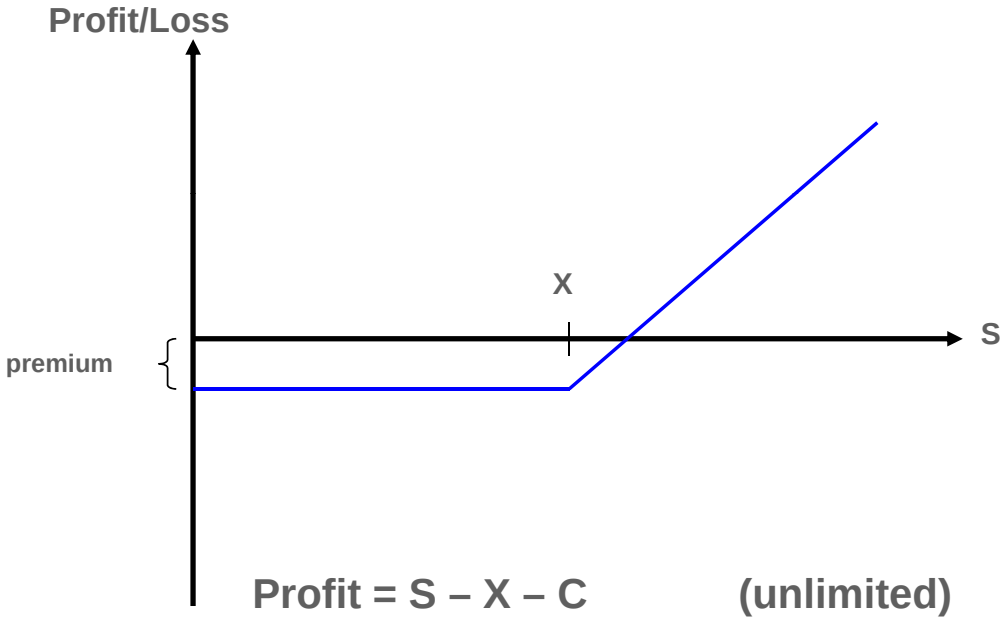
- Sell call options against the stock holding
  - receive money in the form of option premium
  - If options are not exercised, premium is retained as additional income
  - If options are exercised, the stock is available - *covered call option*

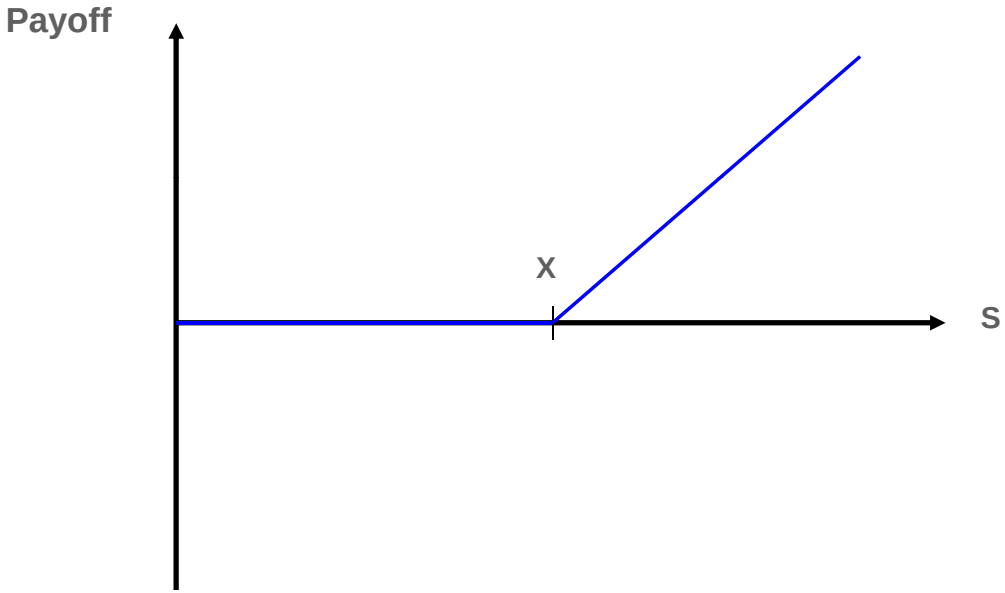
Profit/ Loss and Payoff Diagrams – Risk Reward

	Risk	Reward
Options Buyer	Limited (Premium paid)	Open-ended
Options Seller	Open-ended	Limited (Premium received)

Profit/ Loss and Payoff Diagrams from Options Positions

For call options buyer





Profit = S – X – C **(unlimited)**

Max Loss = C

Where:

S = the price of the underlying asset

X = exercise price of the option

C = call option premium

Profit/ Loss and Payoff Diagrams

- Buying call options to take advantage of a rising palm oil market

Outlook:	Significant advance in the Palm Oil Market
Futures price	June FCPO @ 3500
Strategy:	Buy 1 Sep 3700 OCPO call option @ 100
	Premium: 100 X RM25 = RM2500
Breakeven point:	3800 (strike + premium or 3700 + 100)
Risk:	Limited to premium paid: RM2500

Profit/ Loss and Payoff Diagrams

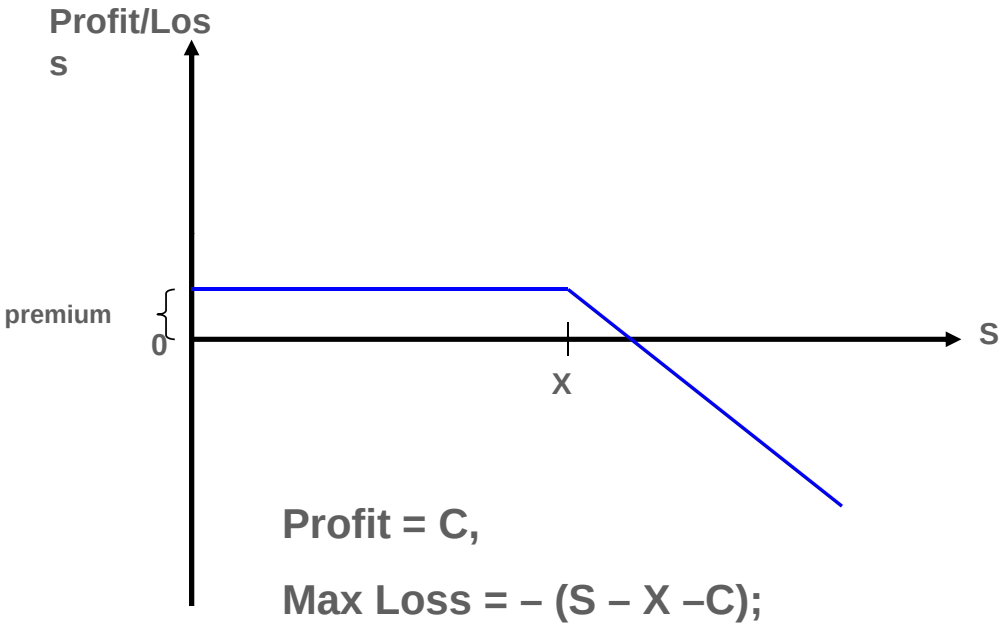
Profit/Loss at expiration:

Futures Price	Option Intrinsic Value	Profit/Loss
3550.00	0.00	-100 (-RM2500)
3600.00	0.00	-100 (-RM2500)
3650.00	0.00	-100 (-RM2500)
3700.00	0.00	-100 (-RM2500)
3750.00	50.00	-50 (-RM1250)
3800.00	100.00	0
3850.00	150.00	50 (+RM1250)
3900.00	200.00	100 (+RM2500)

It can be seen from the table that buying calls can result in significant profits should the FCPO futures rally. More importantly, though, the trader's risk is limited to 100 points no matter how far the FCPO futures may decline

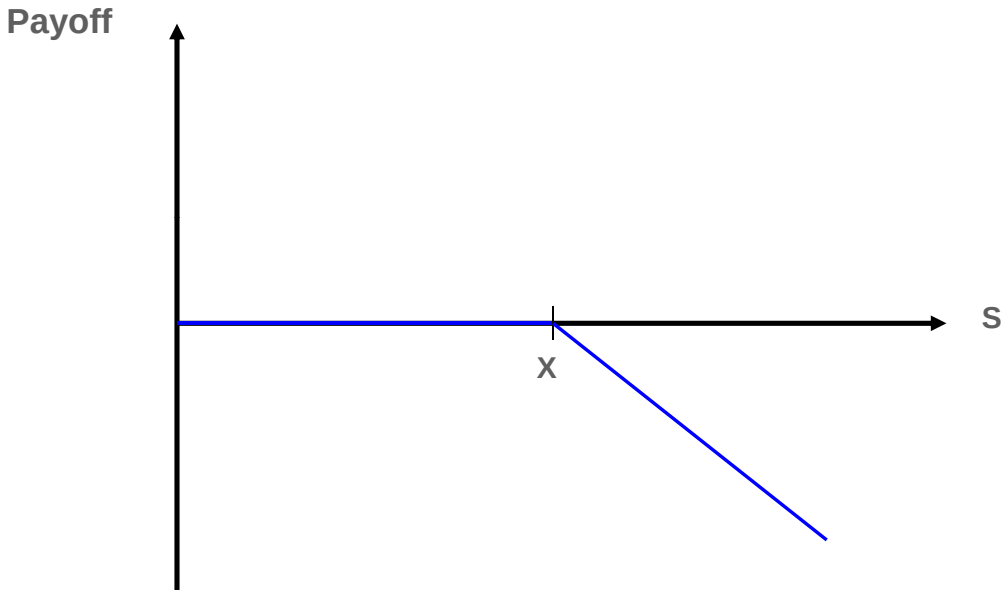
Profit/ Loss and Payoff Diagrams from Options Positions

For call options seller



Profit = C,

Max Loss = – (S – X –C);
unlimited



Where:

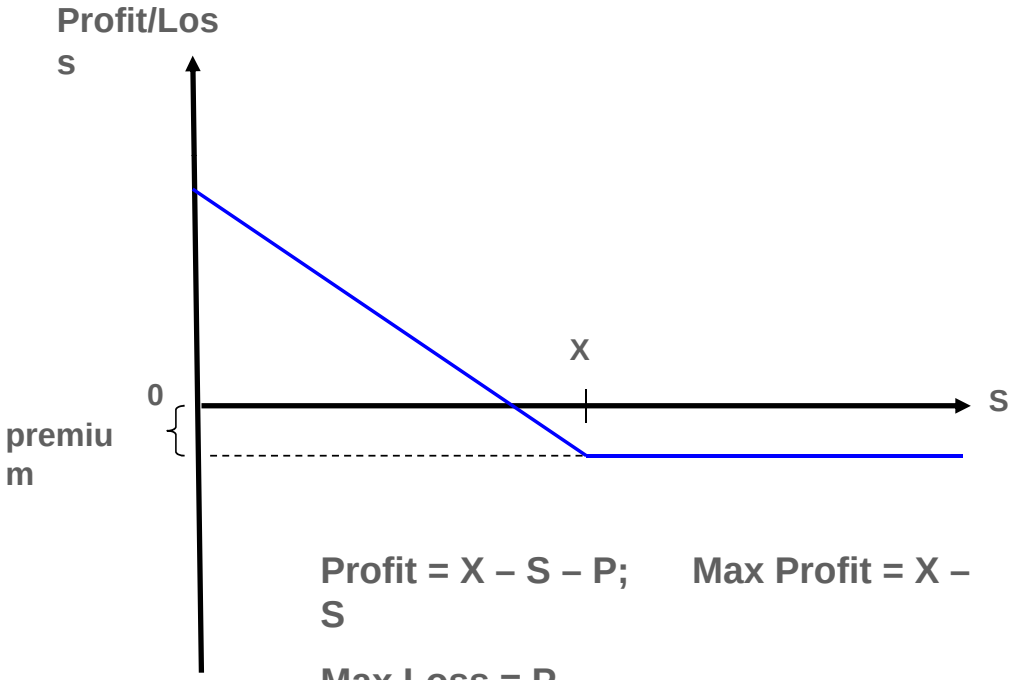
S = the price of the underlying asset

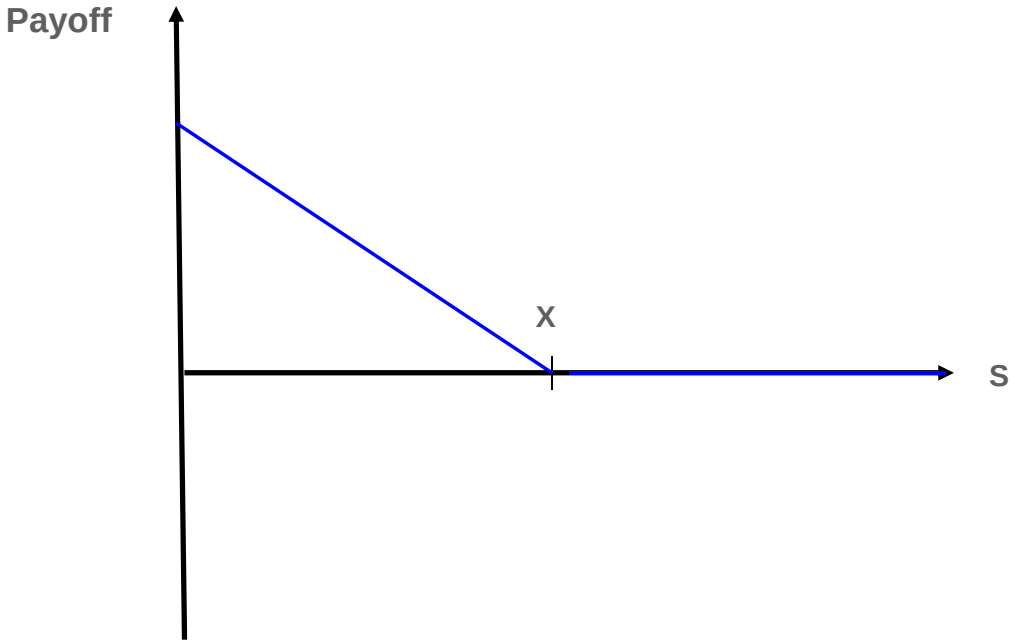
X = exercise price of the option

C= call option premium

Profit/ Loss and Payoff Diagrams from Options Positions

For put options buyer





Profit = X – S – P; Max Profit = X – S

Max Loss = P

Where:

S = the price of the underlying asset

X = exercise price of the option

P = put option premium

Profit/ Loss and Payoff Diagrams

- Buying put options to take advantage of a declining stock market

Outlook:	Significant decline in the stock market
Futures price	August FKLI @ 1520
Strategy:	Buy 1 OKLI 1500 put option @ 16
	Premium: 16 X RM50 = RM800
Breakeven point:	1484 (strike - premium or 1500 - 16)
Risk:	Limited to premium paid: RM800

Profit/ Loss and Payoff Diagrams

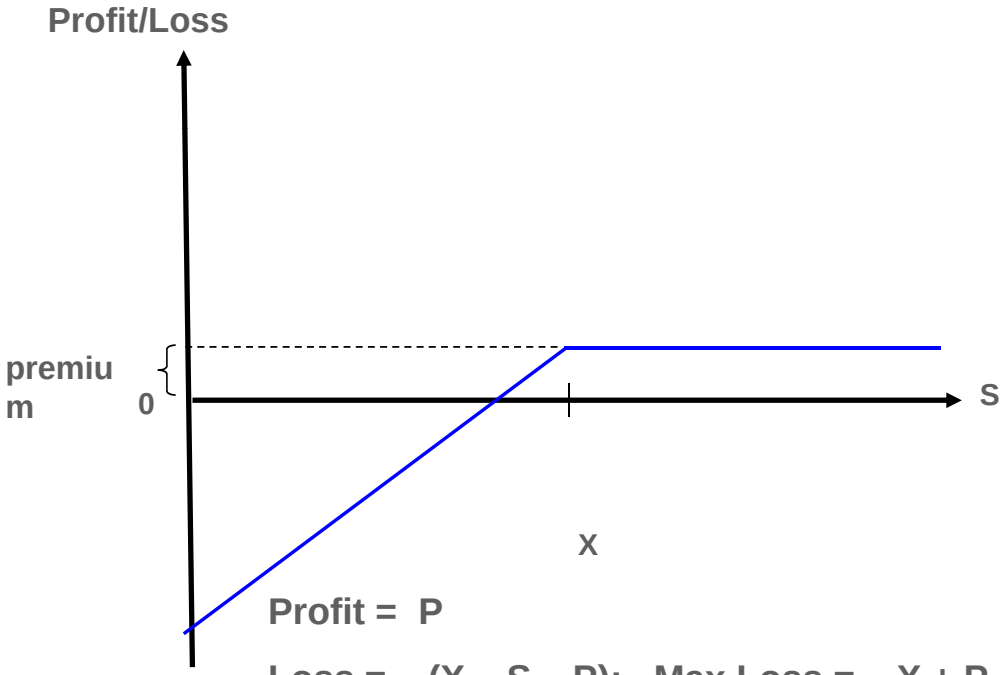
Profit/Loss at expiration:

Futures Price	Option Intrinsic Value	Profit/Loss
1420	80	64 (RM3,200)
1440	60	44 (RM2,200)
1460	40	24 (RM1,200)
1480	20	4 (RM200)
1500	0	-16 (RM800)
1520	0	-16 (RM800)
1540	0	-16 (RM800)
1560	0	-16 (RM800)
1580	0	-16 (RM800)

It can be seen from the table that buying put can result in significant profits should the FKLI declines. More importantly, though, the trader's risk is limited to 16 points no matter how far the FKLI may rally.

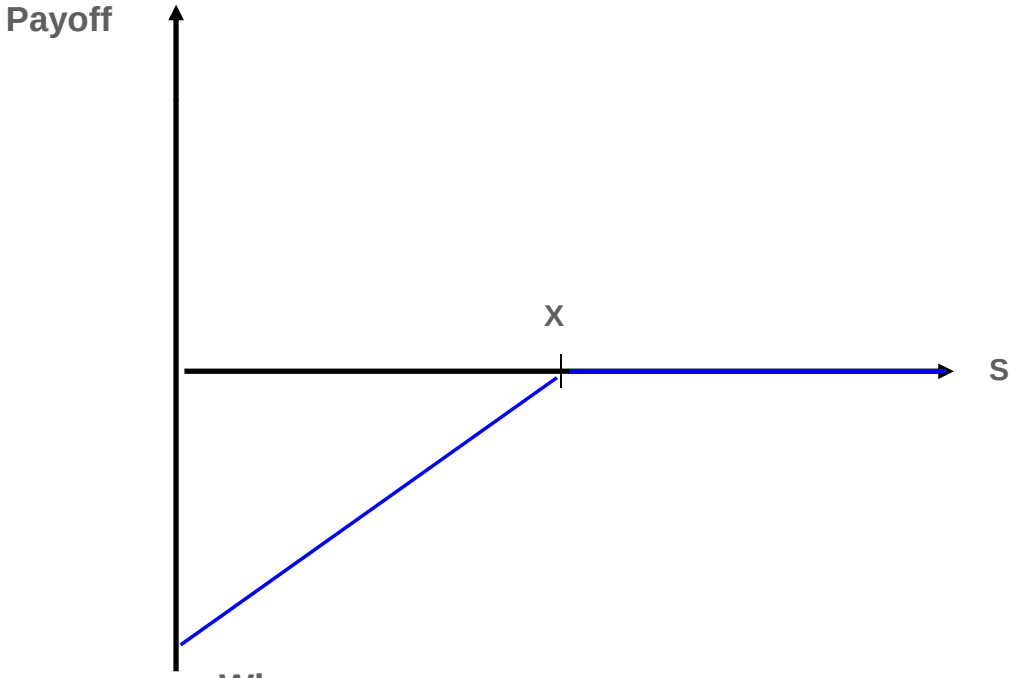
Profit/ Loss and Payoff Diagrams

For Put Options Seller



Profit = P

Loss = – (X – S – P); Max Loss = – X + P



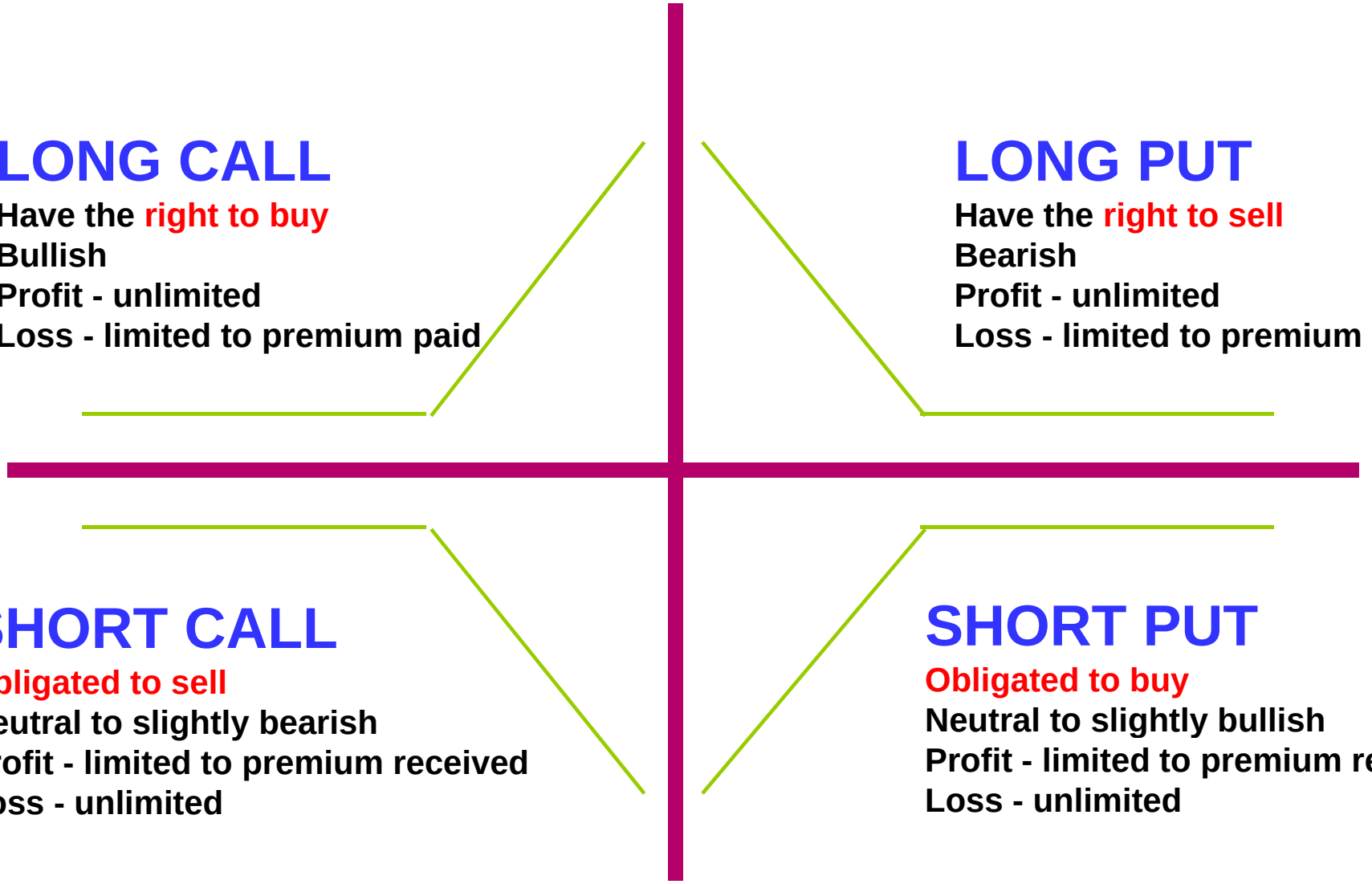
Where:

S = the price of the underlying asset

X = exercise price of the option

p = put option premium

Risk & Reward



LONG CALL

Have the right to buy
Bullish
Profit - unlimited
Loss - limited to premium paid

LONG PUT

Have the right to sell
Bearish
Profit - unlimited
Loss - limited to premium paid

SHORT CALL

Obligated to sell
Neutral to slightly bearish
Profit - limited to premium received
Loss - unlimited

SHORT PUT

Obligated to buy
Neutral to slightly bullish
Profit - limited to premium received
Loss - unlimited

Contract Specifications – OKLI

	OKLI New Specifications
Underlying	**FBM KLCI Futures (FKLI)**
Type	European Style
Contract Size	**One FKLI contract**
Tick Size	0.1 index point valued at RM5
Contract Month	Spot month, the next month and the next two calendar quarterly months. The calendar quarterly months are March, June, September and December.
Trading Hours	First trading session: Malaysian 8:45 a.m. to 12:45 p.m. Second trading session: Malaysian 2:30 p.m. to 5:15 p.m.

OKLI New Specifications (cont)	
Last Trading Day	The last market day of the contract month.
Exercise Price Interval	At least 13 exercise prices (6 are in-the-money, 1 is at-the-money and 6 are out-of-the-money) shall be set at interval of 10 pts for the spot and next month contracts. At least 7 exercise prices (3 are in-the-money, 1 is at-the-money and 3 are out-of-the-money) shall be set at interval of 20 pts for the next 2 quarterly month contracts.
Settlement of Option Exercise	In the absence of contrary instructions delivered to the Clearing House, an option that is in-the money at expiration shall be automatically exercised. Exercise results in a long FKLI position, which corresponds with the option's contract month for a call buyer or a put seller, and a short FKLI position for a put buyer or a call seller. The resultant positions in FKLI shall then be cash-settled based on the final settlement value of FKLI.
Speculative Position Limit	**10,000 FKLI-equivalent contracts** (a combination of OKLI and FKLI contract), net on the same side of the market in all contract months combined.

Contract Specifications – OCPO

Contract Code	Calls: C OCPO Puts: P OCPO
Type	European Options
Underlying	Crude Palm Oil futures contract (FCPO)
Contract Size	One Crude Palm Oil futures contract (of a specified month) of 25 metric tons (MT)
Tick Size	RM0.50 per MT (RM12.50 per contract)
Strike Price Intervals	Trading shall be conducted for put and call options with striking prices in integral multiples of RM50 per MT. There will be at least 11 strike prices (five are in-the-money, one is at-the-money and five are out-of-the-money).
Contract Months	Monthly (list the third, fourth, fifth and sixth forward months) then alternate months going out 24 months of the FCPO contract. The first spot option contract month will be trading the 3rd month FCPO contract.

Daily Price Limit	There will be no daily price limits.
Last Trading Day	The spot options will cease trading at 6pm on the 10th day of every month, or the preceding business day if the 10th day is a non-business day. The futures position will be delivered at end-of-day process and will be available for trading on the next business day.
Exercise	In the absence of contrary instructions delivered to the Clearing House, an option that is in-the money at expiration shall be automatically exercised. Exercise results in a long 3rd month FCPO position, which corresponds with the option's contract month for a call buyer or a put seller, and a short 3rd month FCPO position for a put buyer or a call seller.
Trading Hours	First trading session: Malaysian time: 10.30 a.m. to 12.30 p.m. Second trading session: Malaysian time: 3.00 p.m. to 6.00 p.m.
Speculative Position Limit	10,000 futures equivalent contracts net long or net short for any single month. 15,000 futures equivalent contracts for all contract months combined. Speculative Position Limits are combined together with the FCPO contract.

OCPO Contract Months Example

Example: Available months to trade as at 9 June 12

FCPO	Jun12	Jul12	Aug12	Sep12	Oct12	Nov12	Jan13	Mar13	May13
OCPO	-	-	Aug12*	Sep12	Oct12	Nov12	Jan13	Mar13	May13

FCPO	Jul13	Sep13	Nov13	Jan14	Mar14	May14
OCPO	Jul13	Sep13	Nov13	Jan14	Mar14	May14

*** Aug12 OCPO contract expires on 10 June 2012**
*** New OCPO contract month will be listed on 16 June 2012 together with the FCPO new contract month.**

Option Positions

- Once an investor bought a call or put, there are three possibilities opened to him on any trading day. He can either:

1) **Do nothing**;

2) **Offset his option position** by selling the same option contract in the market. The gain or loss will be the difference in the premium paid and received; or

3) **Exercise it.** However, if it is not at the expiry date this may not be an optimal strategy. Generally a better strategy is to sell the option. Remember , the value of an option comprises two components: intrinsic value and time value. Exercising the option can only realize its intrinsic value but the time value is foregone.

Option Positions

- Once an investor sold a call or a put, there are two possibilities opened to him on any trading day. He can either:

  1) **Do nothing;**

  2) **Offset his option position** by buying the same option contract in the market. The gain or loss will be the difference in the premium paid and received.

Option Positions

- If an investor does nothing by the close of trading on the option's expiration date, there two possible outcomes:

  1) If the option is out-of-the-money, then it expires worthless.

  2) If the option is in-the-money, the option is automatically exercised by the Clearing House and the call (or put) buyer will have a long (or short) in the underlying futures contract.

Options Trading Strategies

Illustrative Examples Using Options on KLCI futures and Options on Crude Palm Oil Futures

Example : Buy Call Option on KLCI Index Futures (OKLI)

- Suppose an investor is bullish on KL stock market. A spot month call option on KLCI futures (OKLI) with a strike price of **1580** is available at a premium of 32.5. If the investor buys 5 calls and the premium of the call rises to 48.1 before the option expires. What is the profit of the investor if he decides to sell it?

  Profit on the long call option position = 5 x (48.1 – 32.5) x RM 50 = RM3,900

- If the investor holds the call option until expiry. At expiration, if the call option on KLCI index futures (OKLI) is in-the-money, the option is automatically exercised by the Clearing House. The resultant call buyer's long position in KLCI futures is cash-settled. If the final settlement price is **1620**, the call buyer receives

  5 x RM 50 [(1620 – 1580) – 32.5] = RM 1,875

Example: Buy Call Option on Crude Palm Oil Futures (OCPO)

- Suppose an investor is bullish on price of the crude palm oil. A spot month call option on crude palm oil futures (FCPO) with a strike price of **3150** is available at a premium of 68.5 If the investor buys 5 calls and the premium of the call rises to 86.5 before the option expires. What is the profit of the investor if he decides to sell it?

  Profit on the long call option position = 5x (86.5 – 68.5) x RM25 = RM2,250

- If the investor holds the call option until expiry. At expiration, if the spot crude palm oil price rises to **3260**, the call is in-the-money and the option is automatically exercised by the Clearing House. The call buyer is long in the crude palm oil futures and receives an amount equal to the difference between the final settlement price and the strike price. The open position will be subsequently marked to market.

Example: Sell Call Option on Crude Palm Oil Futures (OCPO)

- Suppose an investor is bearish on price of the crude palm oil. He can write a call option on crude palm oil futures and receives the premium. Assuming that the following calls are available:

  a) 1-month 3150 call, premium 62

  b) 1-month 3200 call, premium 47

- The investor can sell a naked 1-month call with a strike price of RM 3150 for a premium of 62. If the price of crude palm oil futures falls below RM 3150 at expiration, the option expires worthless and the investor earns RM 62x RM25 =RM 1,550.

- However, if the futures price rises to RM 3280, the call option is in-the-money and is automatically exercised by the Clearing House. The investor will have short position in the futures and pays an amount equal to the difference between the strike price and the settlement price. The open short position will be subsequently marked-to-market.

Example: Long Futures Contract and Long Put (Protective Put)

- Suppose an investor purchases one contract of FCPO at 3140 and at the same time buys a put option on OCPO with a strike price of 3100 at a premium of 42.
- Now, let's consider the outcome when the futures price rises, declines and remains unchanged at the option expiration date.

Futures price rises to 3210

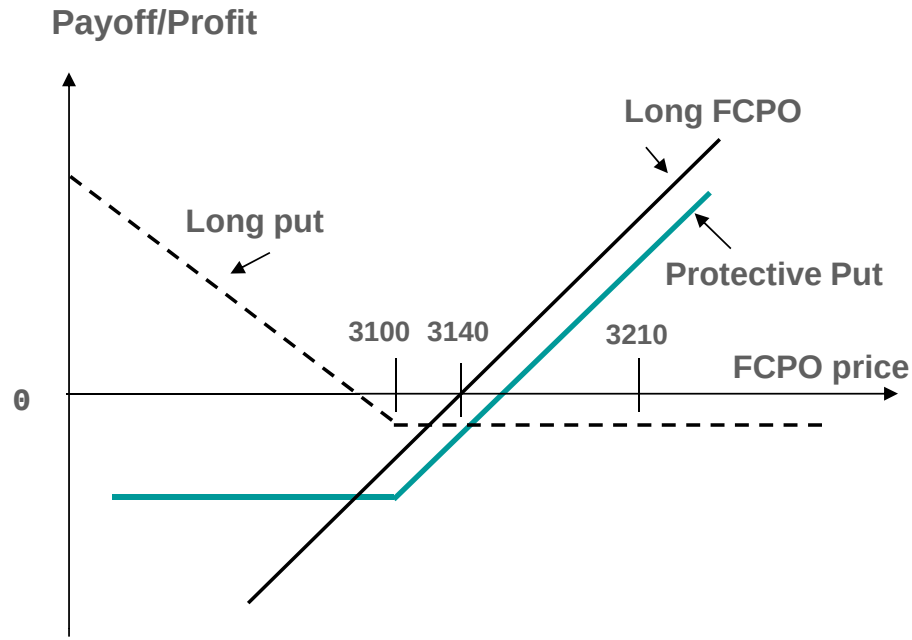
Strategies:

a) **Put expires worthless**

b) **Sell the futures in the market**

Profit :

1 x 25 (RM 3210 – RM 3140 – RM 42*) = RM 700



*** Calculation factors in premium paid**

Futures price drops to 3005, and put premium rises to 94

Strategies:

a) Put is in-the-money and sell the put option in the market

Profit :

1 x 25 x (RM 94 – RM 42) = RM 1,300

Loss in futures position :

1 x 25 x (RM 3140 – RM 3005) = RM 3,375

Maximum loss is limited to RM 3,375 – RM1,300 = RM 2,075

Example: Call Bull Spread

- Suppose an investor takes the following option positions:

a)	Long 1 OCPO 3150 call at	(59)
b)	Short 1 OCPO 3250 call at	30
	Net premium/MT paid	(29)

- The possible outcomes at the option expiration are:

1. Futures price is below 3150; both calls will expire worthless and the investor will lose RM 29 x 25 = (RM 725)

2. Futures price is above 3150; the profit from the long 3150 call position increases as the futures price increases. When the futures price rises above 3179 (strike price + net premium), the profit from the long 3150 call position exceeds the net premium paid. The investor is now making profit from the bull call spread. The **maximum profit is being capped** at:

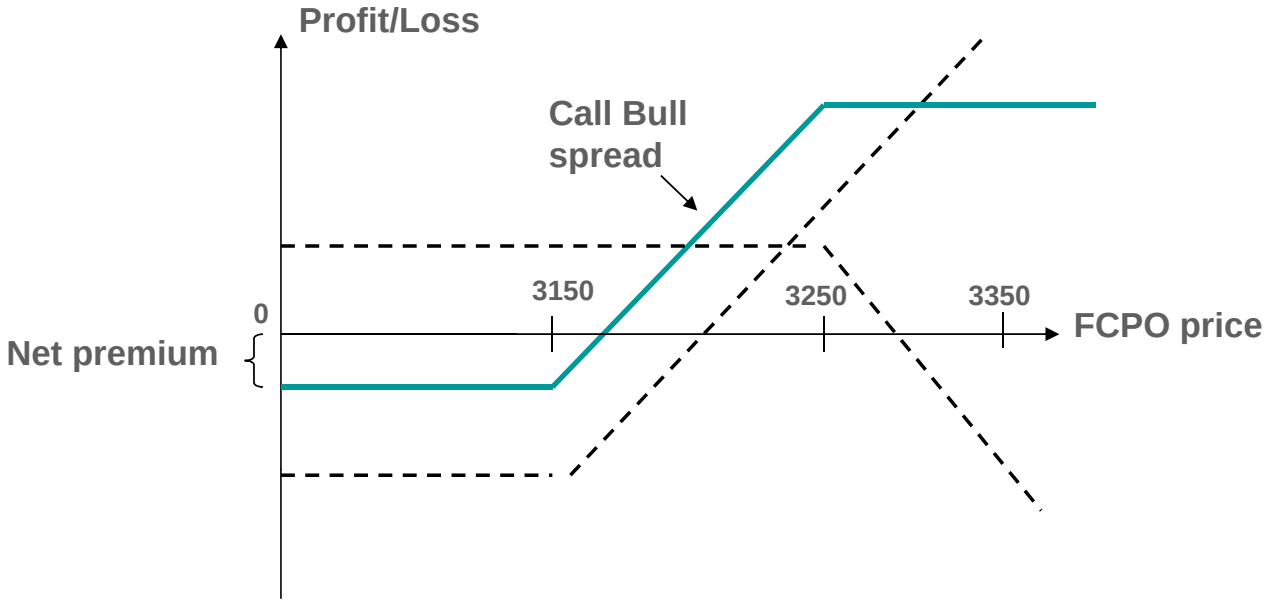
   (3250 – 3150) x 25 – 725 = **RM 1,775**

Cont'd

- We can show the calculation by assuming that the futures price is **3350** at expiration:

Gain from long call	**1 x 25 x (3350 – 3150) =**	**5,000**
Loss from short call	**1 x 25 x (3250 – 3350) =**	**(2,500)**
Net premium paid		**(725)**
Profit		**1,775**

This is a strategy for an investor who is bullish on a crude palm oil price. However, he is not bullish enough to enter into a long call or a long futures position.



Example: Put Bear Spread

- Suppose an investor establishes a put bear spread by:

a)	Long 1 OCPO 1-month 3250 put @	(53)
b)	Short 1 OCPO 1-month 3100 put @	29
	Net premium/MT paid	(24)

- The possible outcomes at the option expiration are:

1. Futures price is above 3250; both puts will expire worthless and the investor will lose RM 24 x 25 = RM 600 from his initial investment

2. Futures price is below 3250; the profit from the long 3250 put position increases as the futures price decreases. When the futures price drops below 3226 (strike price - net premium), the profit from the long 3250 put position exceeds the net premium paid. The investor is now making profit from the bear put spread. The **maximum profit is being capped** at:

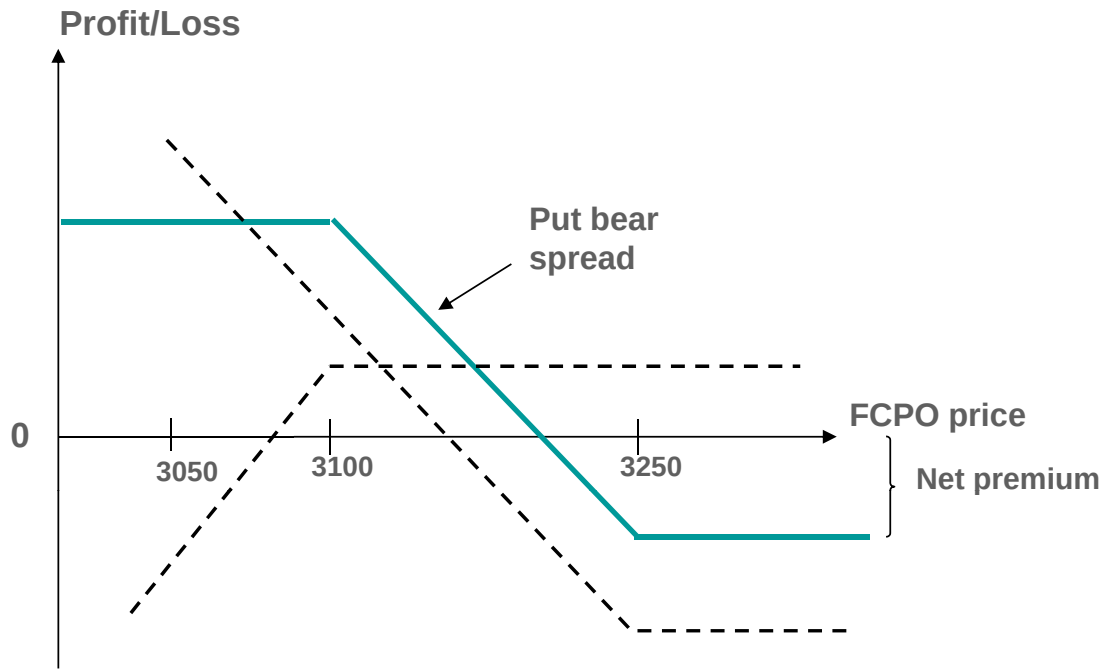
   (3250 – 3100) x 25 – 600 = **RM 3,150**

Cont'd

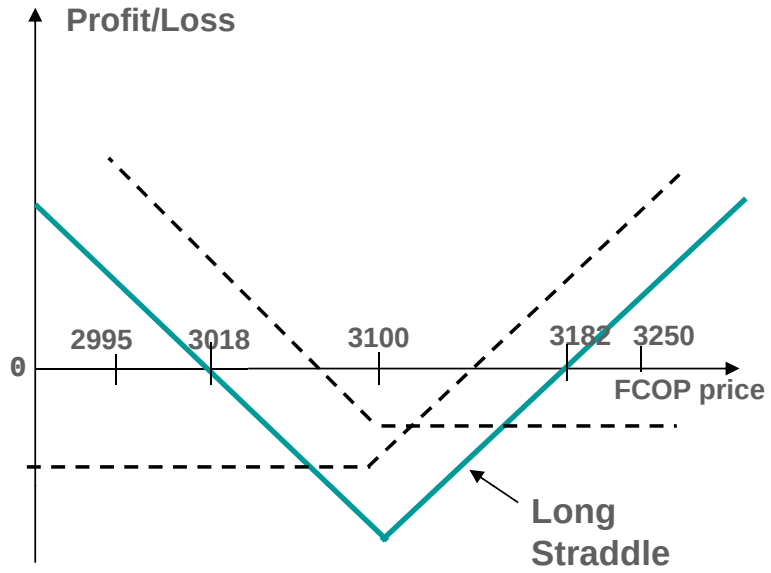
- We can show the calculation by assuming that the futures price is **3050** at expiration:

Gain from long put	**1 x 25 x (3250 – 3050) =**	**5,000**
Loss from short put	**1 x 25 x (3050 – 3100) =**	**(1,250)**
Net premium paid		**(600)**
Profit		**3,150**

This is a strategy for an investor who is bearish on crude palm oil price. However, he is not bearish enough to enter into a long put or a short futures position.



Example: Long Straddle



- Suppose an investor establishes a long straddle by:

a)	Long 1 OCPO 3100 call at	53
b)	Long 1 OCPO 3100 put at	29
	Total premium/MT paid	82

- The possible outcomes at the option expiration are:

1. **Futures price rises above 3182, i.e. strike price plus total premium paid. The potential profit from the long call is futures price less strike price less total premium paid multiplied by 25. For example, if the futures price is 3250, the profit = (3250 – 3100 – 82) x 25 = RM 1,700**

2. **Futures price falls below 3018, i.e. strike price minus total premium paid. The potential profit from the long put is strike price less futures price less total premium paid multiplied by 25. For example, if the futures price is 2995, the profit = (3100 – 2995 – 82) x 25 = RM 575**

An Overview of Naked Option Positions

Strategy	Expectation		Time Decay Effect	Potential Profit	Potential Loss
	Futures price	Volatility			
Long Call	Bullish	Expand	Hurt	Unlimited	Limited
Long Put	Bearish	Expand	Hurt	Unlimited (equal to entire strike price)	Limited
Short Call	Bearish or unchanged	Contract	Help	Limited	Unlimited
Short Put	Bullish or unchanged	Contract	Help	Limited	Unlimited (equal to entire strike price)