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Mastering Time Value in Options Trading

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As with all investments, your capital is at risk

Mastering Time Value in Options Trading

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December 2024

A reminder of the basic principles of options

An option is a **derivative** : its value changes according to changes in the price of an underlying asset

An option is a **right**

The pre-determined price is called the **strike price**

The investor chooses the **maturity** during which this right may be exercised

To obtain this right to buy or sell, the option holder pays an amount known as the **premium**

Six factors that affect an option premium

	Call value	Put value
Underlying price	↗	↘
Interest rates	↗	↘
Maturity	↗	↗
Underlying volatility	↗	↗
Strike price	↘	↗
Dividends	↘	↗

Components of an options premium

The trading price of an option contract, known as the premium, is made up of two elements:

Option premium = intrinsic value + extrinsic value

Intrinsic value : profit that would be obtained if the option were exercised immediately

Extrinsic value : potential future value influenced by external factors including time, implied volatility and interest rates & dividends

Time Value is a Key Component of the Premium

Time value in numbers

Share price = 100 euros				
	Strike price : Call	**Premium**	**Intrinsic value**	**Extrinsic value**
In the money	75 €	28 €	25 €	**3 €**
At the money	100 €	15 €	0 €	**15 €**
Out of the money	150 €	2 €	0 €	**2 €**

Premium – Intrinsic value

Extrinsic Value = Time Value

Important components of time value

Implied volatility : represents the expected volatility of the underlying asset over the life of the option.

Interest rates : rising interest rates increase the cost of debt financing for share purchases, making **call options more expensive** and reducing the value of put options.

Dividends : the distribution of dividends by a company can lead to a **fall in the price of calls** as a result of a fall in the share price. At the same time, the value of puts can rise.

Time Value is Linked to an Option's Maturity

Option Maturities Available on Euronext's CAC 40 and AEX Indices

Maturities available on the CAC 40 and the AEX		
Daily Options *(Launched in 2024 for the CAC 40 option due to significant client demand)*	Maturities available for each working day	**Product code** : • P1, P2… for the CAC 40 • A1, A2… for the AEX
Weekly Options	Maturities expiring every week on Friday	**Product code** : • 1PX, 2PX… for the CAC 40 • AX1, AX2… for the AEX
Monthly Options	Maturities expiring on the third Friday of every month	**Product code** : • PXA for the CAC 40 • AEX for the AEX

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Longer expiries lead to higher premiums

Example : ***CAC40 8,150 CALL***

Underlying CAC 40 price on 1st April : ***8,170***

4th April 2024
Daily Option
Premium : 22 euros

12th April 2024
Weekly Option
Premium : 70 euros

19th April 2024
Monthly Option
Premium : 88.05 euros

21st June 2024
Monthly Option
Premium : 140 euros

20th December 2024
Monthly Option
Premium : 400 euros

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Extrinsic value also increases with the life of the option

Example : ***CAC40 8,150 CALL***

Underlying CAC 40 price on 1st April : ***8,170***

Calculation example : 20th December expiry

- Strike price : 8,150 CALL
- Underlying price : 8,170
- Premium : 400 euros

Intrinsic value : 8,170 – 8,150 = 20

Extrinsic value : **400 – 20 = 380**

4th April 2024
Premium : 22 euros

Extrinsic value : 2

12th April 2024
Premium : 70 euros

Extrinsic value : 50

21st June 2024
Premium : 140 euros

Extrinsic value : 120

Combine Options with Different Maturities to Enhance Strategies

What is a calendar spread?

Calendar spreads are low-risk strategies that involve buying and selling options of the same type (either both calls or both puts) but with different expiries

Buy a calendar spread

Sell the option with the closer expiry

Buy the option with the further expiry

Example 1 : calendar spread

21st **June** 2024 / 20th **December** 2024 **7,900** PUT calendar

An investor implementing this strategy would buy the 7,900 PUT option with a December expiration while simultaneously selling a PUT option with a June expiration.

Example 2 : diagonal calendar spread

21st **June** 2024 **8,100** / 20th **December** 2024 **8,200** CALL diagonal calendar

An investor implementing this strategy would buy the 8,200 CALL option with a December expiration while simultaneously selling an 8,100 CALL option with a June expiration.

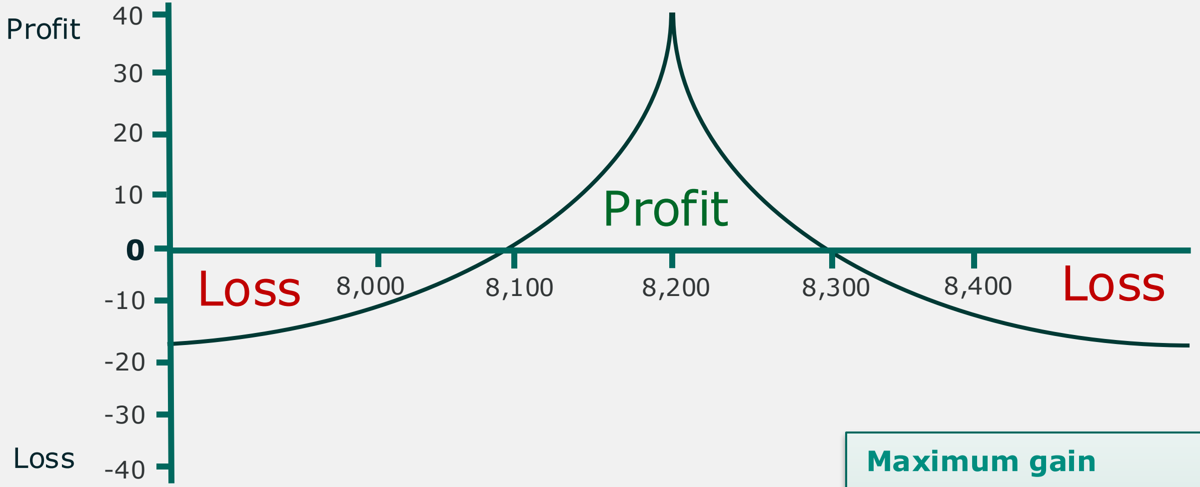
Why use calendar spreads?

Holders of calendar spreads are able to use a low-risk options strategy, that takes advantage of changes in **time value**.

As a buyer of a calendar spread, the option 'leg' that you are selling **loses value more quickly** because it expires sooner, which should offset the cost of the longer-dated option that you are simultaneously buying.

Conversely, the seller of a calendar spread generally expects the price of an underlying asset to **fluctuate significantly**, either upwards or downwards, in order to benefit from an increase in implied volatility.

Example: buying a call spread calendar



Objective

To benefit from little underling price movement, remaining close to the strike price

PnL table: Buy a 9th April/12th April 8,200 call spread calendar	
Sell 1 CAC40 9th-April-2024 8,200 CALL :	**10.00 €**
Buy 1 CAC40 12th-April-2024 8,200 CALL :	**20.00 €**
Total premium (net loss) :	**10.00 €**

Maximum gain

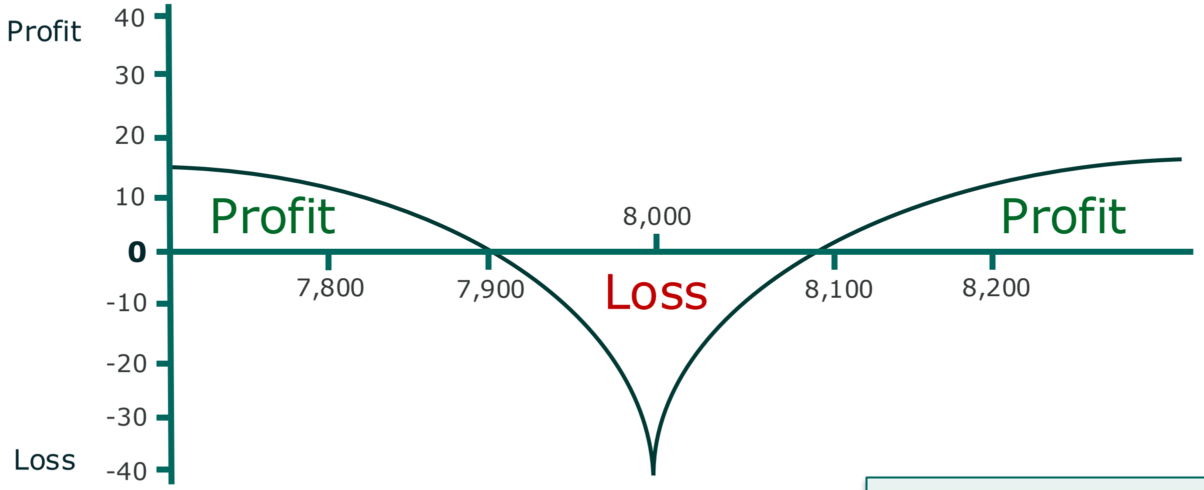
First step: for the underling price to equal the exercise price of the sold/nearer-dated call option upon expiry.

Final step: we are now solely holding a buy position in the 12th April Call. The gain will then depend on the price of the 8,200 Call expiring on 12th April 2024.

Maximum risk

Premium cost of 10.00 €.

Example : selling a put calendar spread



Objective

To profit from a significant change in the underlying price

PnL table: Selling a 19th April/26th April 8,000 put calendar spread	
Buy 1 CAC40 19th-April-2024 8,000 PUT :	**15.00 €**
Sell 1 CAC40 26th-April-2024 8,000 PUT :	**30.00 €**
Total premium (net gain) :	**15.00 €**

Maximum profit

15.00 € net premium.

Maximum risk

The put purchased (near-dated) expires worthless and the put sold remains open. The maximum risk would be equal to the price of the 8000 put expiring on 26th April, minus the premium received.

Thank you for listening.
For more information on options and additional financial derivatives products, please check Euronext website :

https://www.euronext.com/en/for-investors/financial-derivatives

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