Options: Basic Types and Trades

Financial Mathematics Clinic

SLAS – University of Kent
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2 Glossary

3 Options
These slides are (mainly) aimed to

- Undergraduate students.
- Postgraduate students doing Financial Mathematics for the first time.
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Objective

- Learn the principles and the differences among the basic types and trades of options.
Glossary

- **Bearish strategy.** Financial trades built on the assumption that the price of an asset will drop.

- **Bullish strategy.** Financial trades built on the assumption that the price of an asset will increase.

- **Premium (of an option).** Current market price of the option.

- **European option.** A financial instrument that can only be exercised at maturity.
What are they?
The Basics

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Financial instruments.
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How do they work?

The owner has the right (not the obligation) to sell/buy the underlying asset at a specified price (strike) at a certain time (or times).

What kind of assets?
Anything! Commodities, rates of interest, stocks, currencies, etc.
The Basics

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  Financial instruments.

- How do they work?
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One of the most common categorisations is depending on the option rights, i.e.

- A *call* is an option that gives the owner the right to buy the underlying asset.
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- A *call* is an option that gives the owner the right to buy the underlying asset.
- A *put* is an option that gives the owner the right to sell the underlying asset.
Basic Trades

Long call

- We buy the call (we have the right to buy the underlying asset).
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- We buy the call (we have the right to buy the underlying asset).
- Bullish strategy.
- We exercise the option if the price is higher than the strike (K).
**Basic Trades**

**Long call**

- We buy the call (we have the right to buy the underlying asset).
- Bullish strategy.
- We exercise the option if the price is higher than the strike (K).
- The maximum loss would be the premium.
Basic Trades

- E.g. for European option with $K=100$ and premium=$10$, the payoff and profit graph is:
Basic Trades

Long put

- We buy the put (we have the right to sell the underlying asset).
Long put

- We buy the put (we have the right to sell the underlying asset).
- Bearish strategy.
**Basic Trades**

**Long put**

- We buy the put (we have the right to sell the underlying asset).
- Bearish strategy.
- We exercise the option if the price is lower than the strike.
Basic Trades

Long put

- We buy the put (we have the right to sell the underlying asset).
- Bearish strategy.
- We exercise the option if the price is lower than the strike.
- The maximum loss would be the premium.
Basic Trades

- E.g. for European option with $K=100$ and premium=$10$, the payoff and profit graph is:
Short call

- We sell the call (we might be obligated to sell the underlying asset).
Basic Trades

Short call

- We sell the call (we might be obligated to sell the underlying asset).
- Bearish strategy.
Basic Trades

Short call

- We sell the call (we might be obligated to sell the underlying asset).
- Bearish strategy.
- There’s no limit on the possible loss!
Short call

- We sell the call (we might be obligated to sell the underlying asset).
- Bearish strategy.
- There’s no limit on the possible loss!
- It is possible that we don’t own the underlying asset.
Basic Trades

- E.g. for European option with $K=100$ and premium=10, the payoff and profit graph is:
Basic Trades

Short put

- We sell the put (we might be obligated to buy the underlying asset).
- Bullish strategy.
- The maximum loss occurs if the stock drops to 0 (it can be really high!).
Basic Trades

- E.g. for European option with $K=100$ and premium=$10$, the payoff and profit graph is:
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QUESTIONS?