

Options: Introduction

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Outline

→ Introduction

- Definition
- Classification

Option Mechanics

- Long Call
- Short Call
- Long Put
- Short Put

Put Call Parity

Option: Definition

- An option is a contract that gives the buyer the right, but not the obligation, to buy or sell an underlying asset at a specific price on or before a certain date.
- We may or may not choose to exercise the option.
- It depends on whether it is profitable for me to exercise the option or not.

Forward : Example



Come what may, I am
going to marry him
when I turn 20



1913

Option: Example

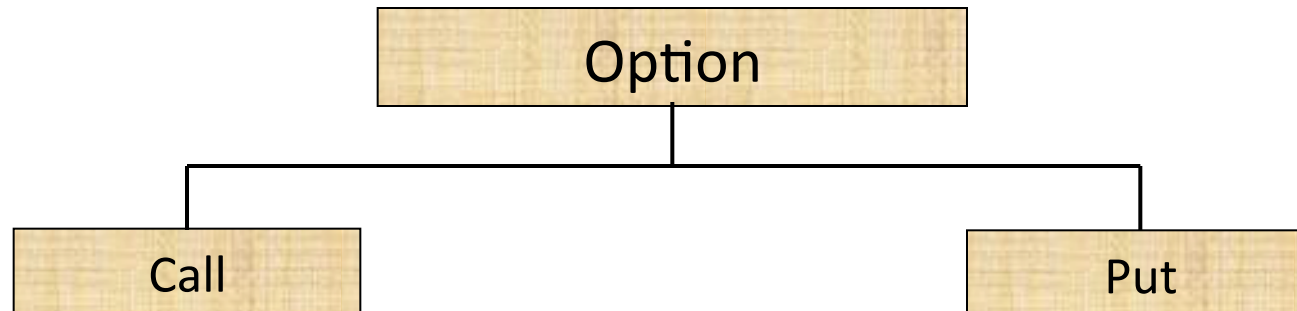


2013



Option: Classification

- ❑ Options can be divided into two broad categories: 'Call Option' and 'Put Option'.
- ❑ Call Option give you an option to buy.
- ❑ Put Option gives you an option to sell.



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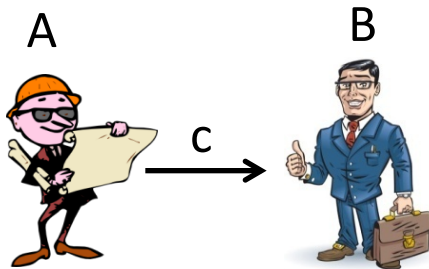
Put Call Parity

Call Option: Physical Settlement

Settlement Date

Deal is signed

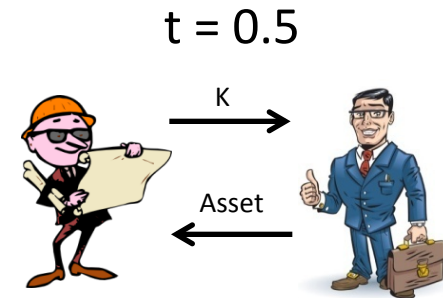
Expiration Date



$t = 0$

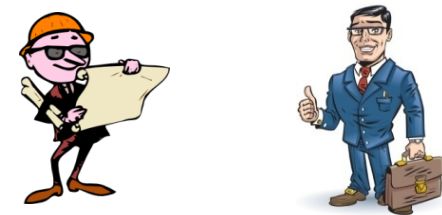
Deal is signed with A paying the premium to B

If $S_T > K$
Option Exercised



$t = 0.5$

If $S_T < K$
Option not Exercised

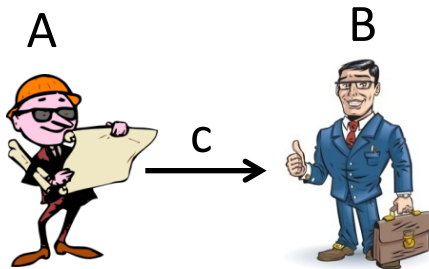


Call Option: Cash Settlement

Settlement Date

Deal is signed

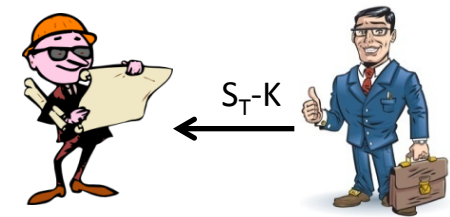
Expiration Date



$t = 0$

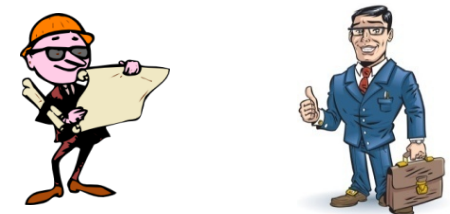
Deal is signed with A paying the premium to B

If $S_T > K$
Option Exercised



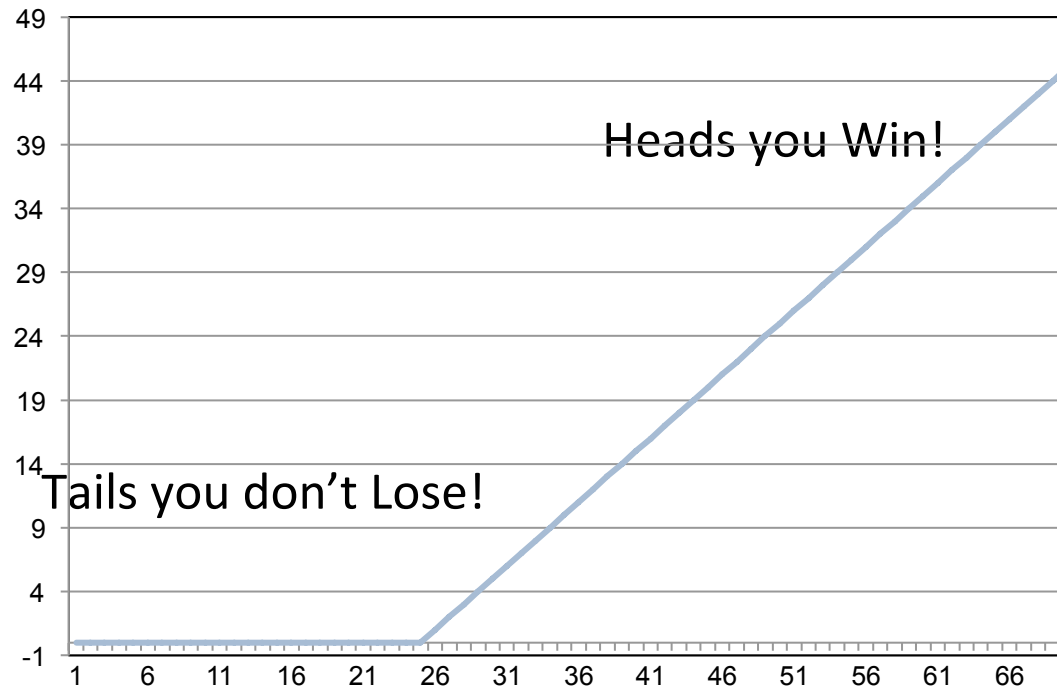
$t = 0.5$

If $S_T < K$
Option not Exercised

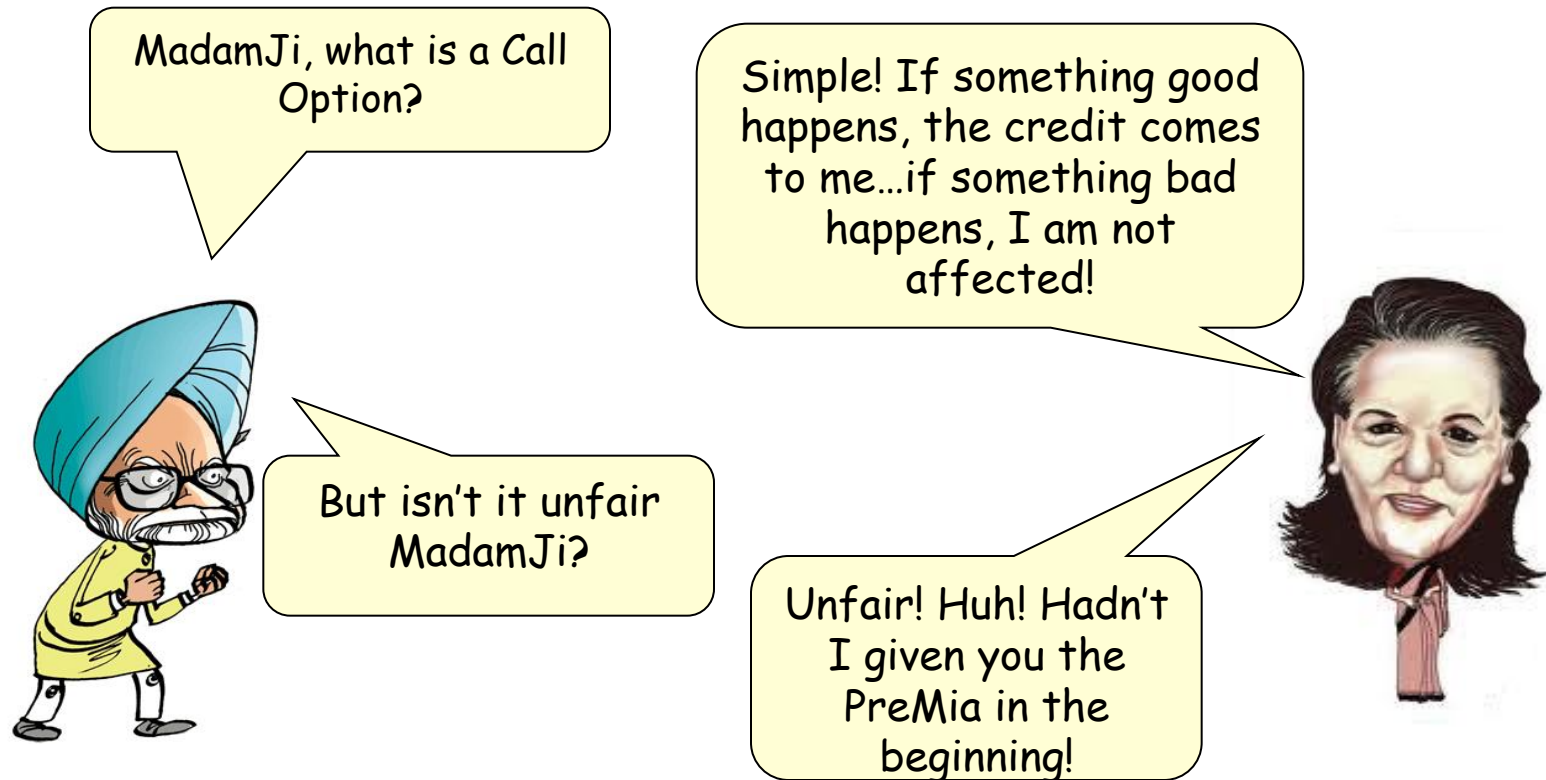


Call Option

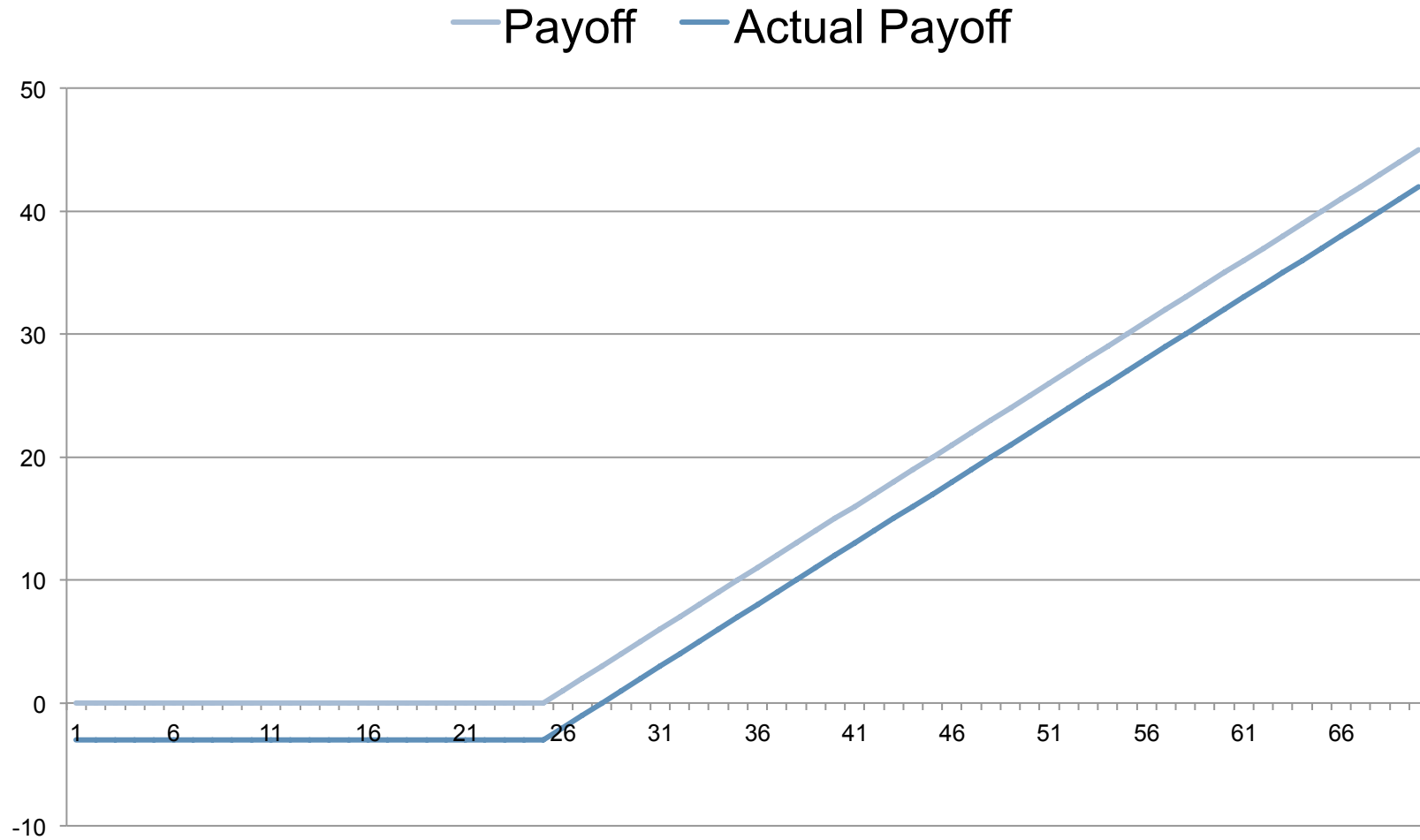
- Call Option is a derivative defined over an underlying in which the buyer gets $\text{Max}(S_T - K, 0)$ at a pre-decided expiration date T .
- If the underlying price (S_T) is more than K
 - Buyer gets $S_T - K$.
- If the underlying price (S_T) is less than K
 - Buyer gets 0.



Call Option: Example



Call Option



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Call Option

- Long Call
- Short Call

Put Option

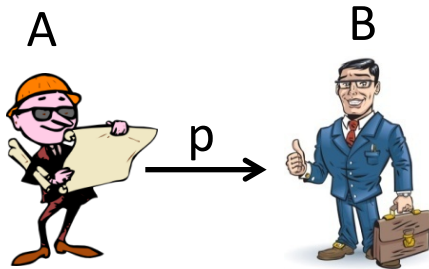
- Long Put
- Short Put

Put Option: Physical Settlement

Settlement Date

Deal is signed

Expiration Date

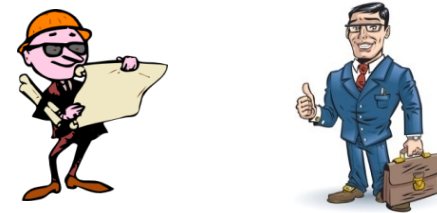


t = 0

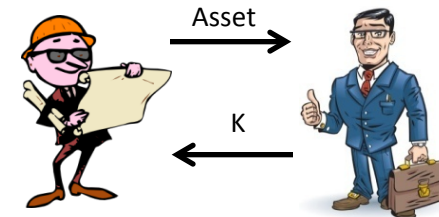
t = 0.5

Deal is signed with A paying the premium to B

If $S_T > K$
Option not Exercised



If $S_T < K$
Option Exercised

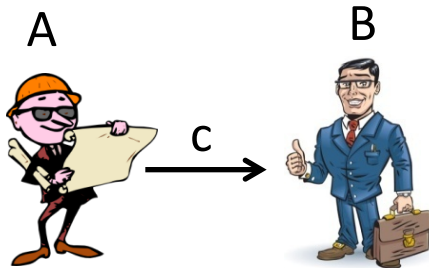


Put Option: Cash Settlement

Settlement Date

Deal is signed

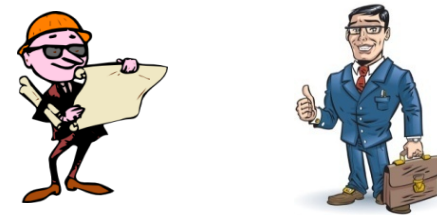
Expiration Date



$t = 0$

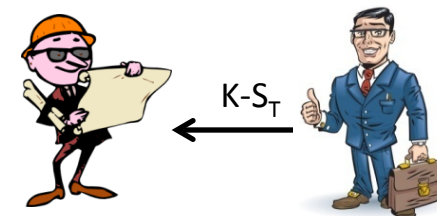
Deal is signed with A paying the premium to B

If $S_T > K$
Option not Exercised



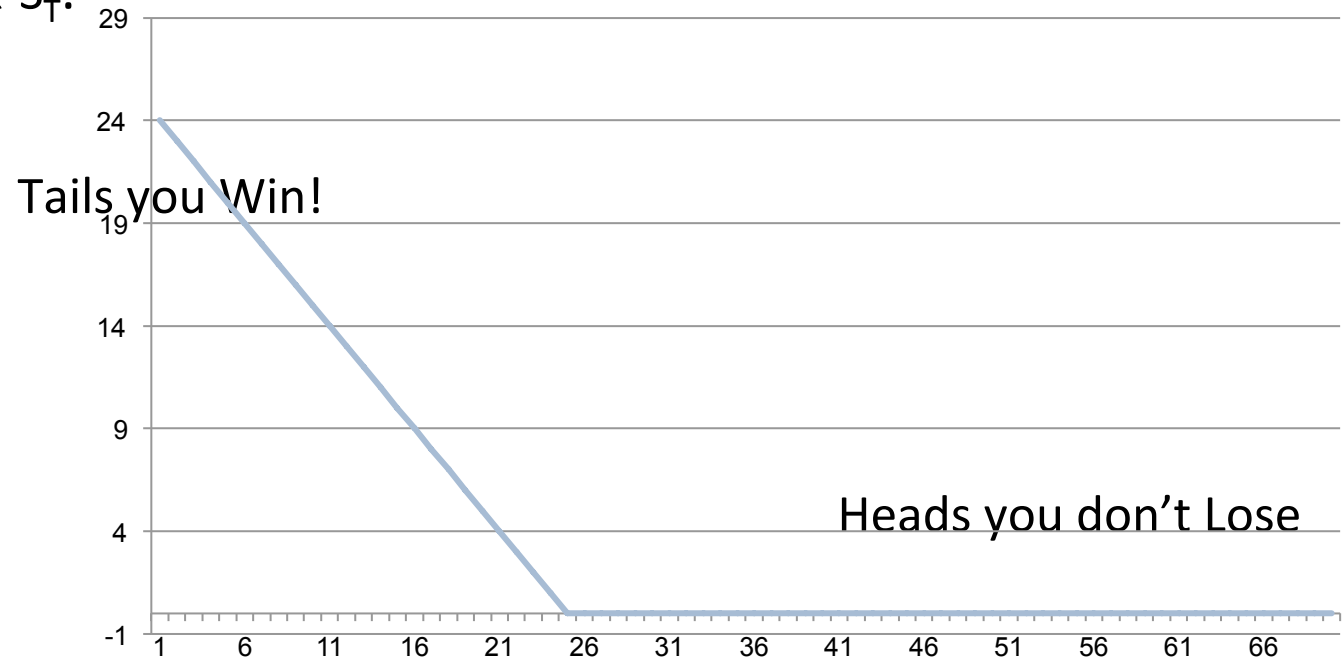
$t = 0.5$

If $S_T < K$
Option Exercised

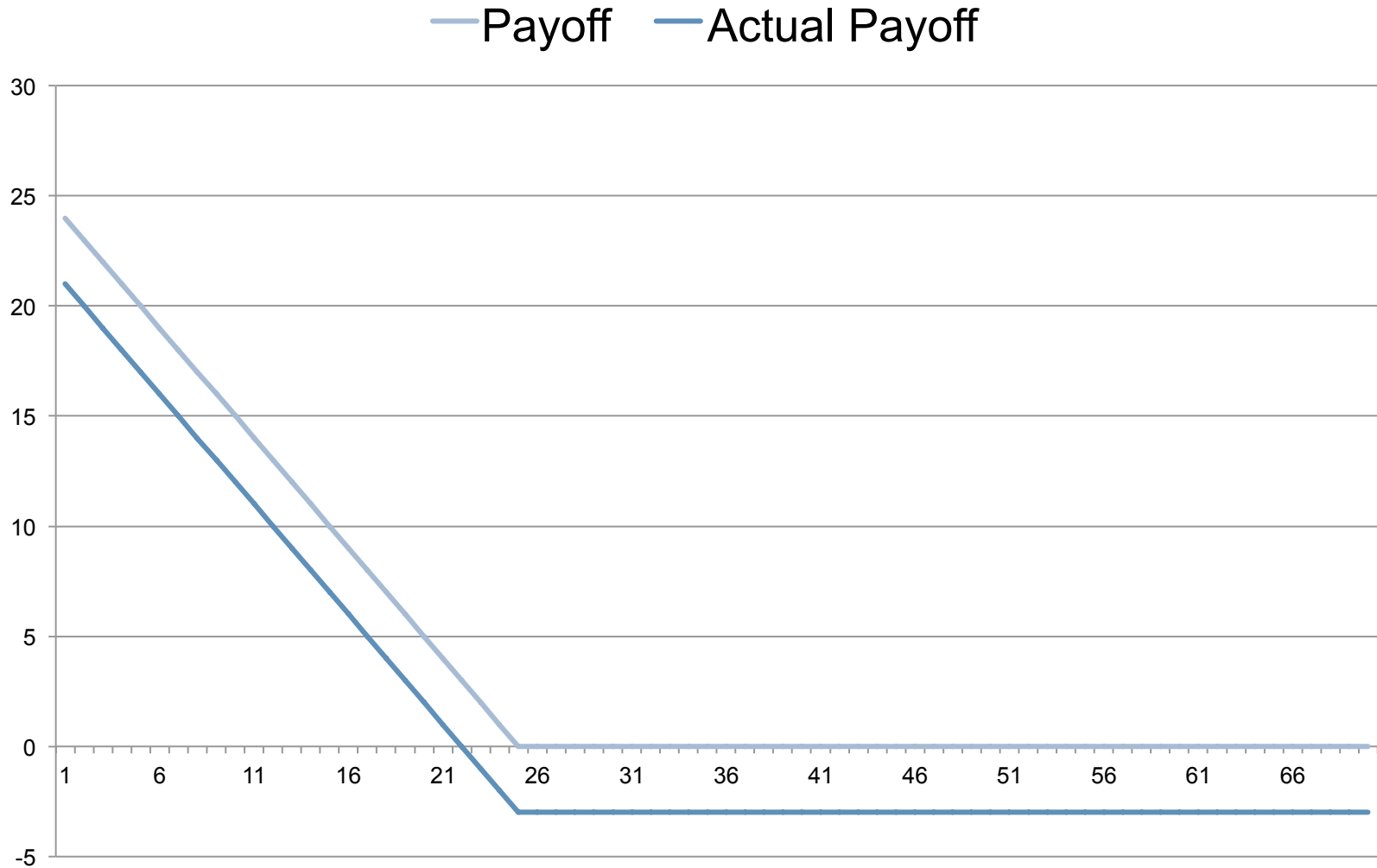


Put Option: Payoff

- Put Option is a derivative defined over an underlying in which the buyer gets $\text{Max}(K-S_T, 0)$ at a pre-decided expiration date T .
- If the underlying price (S_T) is more than K
 - Buyer gets 0.
- If the underlying price (S_T) is less than K
 - Buyer gets $K-S_T$.



Put Option



Summary

	Call	Put
Long	Low Risk Increase	Low Risk Decrease
Short	High Risk Decrease	High Risk Increase

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➔ Put Call Parity

Put Call Parity

- Holding Long Call and Short Put is equivalent to holding a Long Forward.

