

Chapter 22 – Part 1
Options and Corporate Finance: Basic Concepts

- Options
- Call Options
- Put Options
- Selling Options
- Reading *The Wall Street Journal*
- Combinations of Options
- Valuing Options
- An Option-Pricing Formula
- Stocks and Bonds as Options
- Capital-Structure Policy and Options
- Mergers and Options
- Investment in Real Projects and Options
- Summary and Conclusions

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Options

- Many corporate securities are similar to the stock options that are traded on organized exchanges.
- Almost every issue of corporate stocks and bonds has option features.
- In addition, capital structure and capital budgeting decisions can be viewed in terms of options.

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Options Contracts: Preliminaries

- Option Definition.
- Calls versus Puts
- Call options
- Put options.
- Exercising the Option
- Strike Price or Exercise Price
- Expiration Date
- European versus American options

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Options Contracts: Preliminaries

- Intrinsic Value
- Speculative Value

$$\boxed{\text{Option Premium}} = \boxed{\text{Intrinsic Value}} + \boxed{\text{Speculative Value}}$$

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Value of an Option at Expiration

Impact of leverage...

Stock price is \$50. Buy 100 shares
Call strike is \$50, price is \$10. Buy 1 contract.
Put strike is \$50, price is \$10. Buy 1 contract.

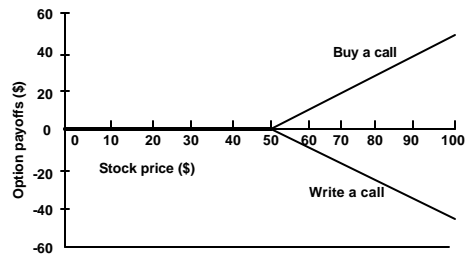
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$$C = S - E$$

$$P = E - S$$

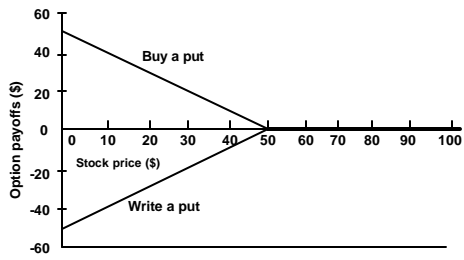
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Call Option Payoffs



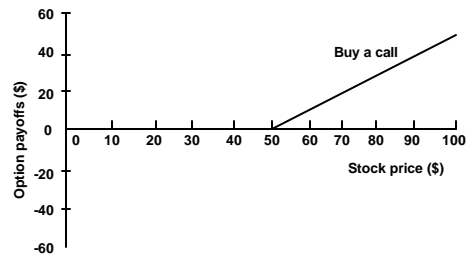
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Put Option Payoffs



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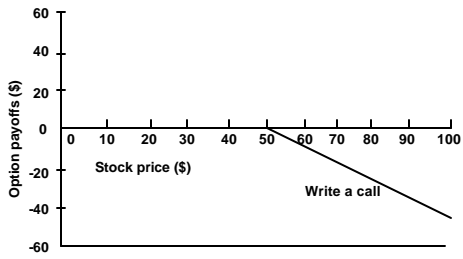
Call Option Payoffs



Exercise price = \$50

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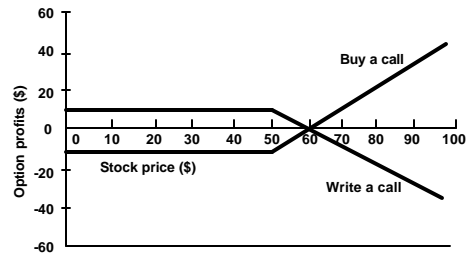
Call Option Payoffs



Exercise price = \$50

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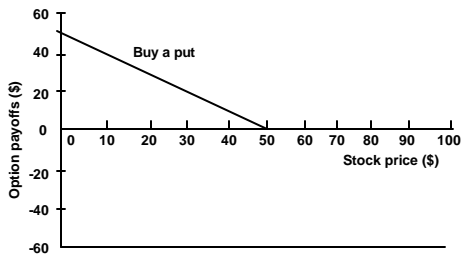
Call Option Profits



Exercise price = \$50; option premium = \$10

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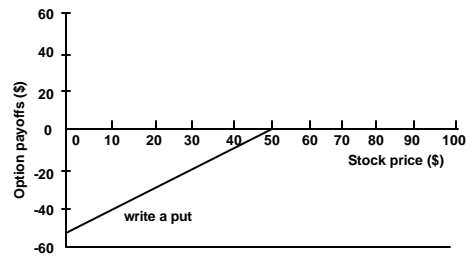
Put Option Payoffs



Exercise price = \$50

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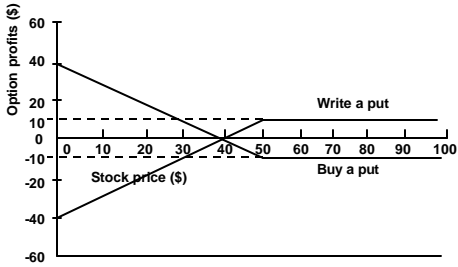
Put Option Payoffs



Exercise price = \$50

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Put Option Profits

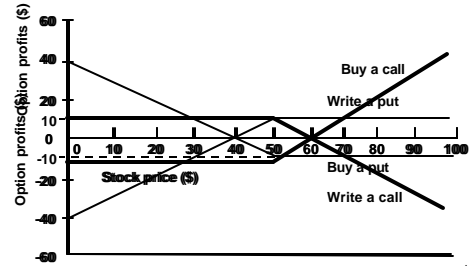


Exercise price = \$50; option premium = \$10

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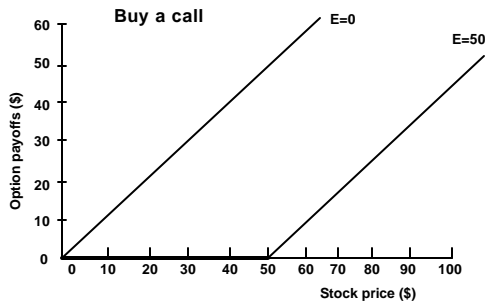
Selling Options – Writing Options

- The seller (or writer) of an option has an obligation.
- The purchaser of an option has an option.



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Call Option Payoffs at Expiration (? exercise)



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Option Pricing Bounds at Expiration

- Upper bounds
 - Call Options
 - Put Options
- Lower Bounds
 - Call option intrinsic value
 - $= \max [0, S - E]$
 - Put option intrinsic value
 - $= \max [0, E - S]$
- In-the-money / Out-of-the-money
- Time premium/time decay
- At expiration, an American call option is worth the same as a European option with the same characteristics.

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Reading *The Wall Street Journal*

Option/Strike	Exp.	--Call--		--Put--	
		Vol.	Last	Vol.	Last
IBM	130 Oct	364	15¼	107	5¼
138¼	130 Jan	112	19½	420	9¼
138¼	135 Jul	2365	4¾	2431	13/16
138¼	135 Aug	1231	9¼	94	5½
138¼	140 Jul	1826	1¾	427	2¾
138¼	140 Aug	2193	6½	58	7½

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Valuing Options

- The last section concerned itself with the value of an option at expiration.
- This section considers the value of an option prior to the expiration date.

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Option Value Determinants

Call Put

1. Exercise price
2. Stock price
3. Interest rate
4. Volatility in the stock price
5. Expiration date

The value of a call option C_0 must fall within
 $\max(S_0 - E, 0) \leq C_0 \leq S_0$.

The precise position will depend on these factors.

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Varying Option Input Values

- Stock price:

- Strike price:

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Varying Option Input Values

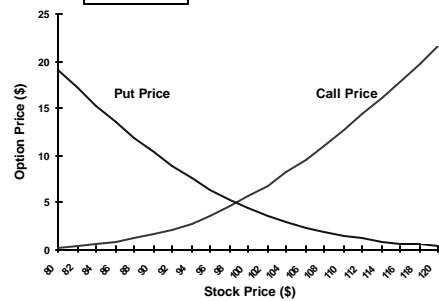
- Time until expiration:

- Volatility:

- Risk-free rate:

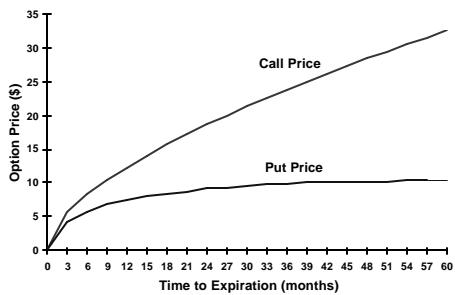
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Put and Call Option Prices



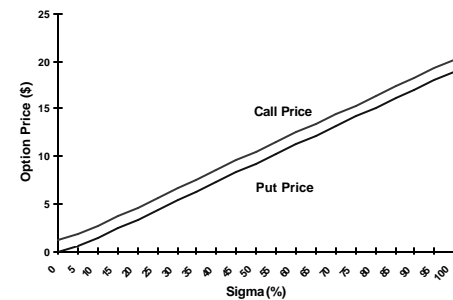
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Option Prices and Time to Expiration

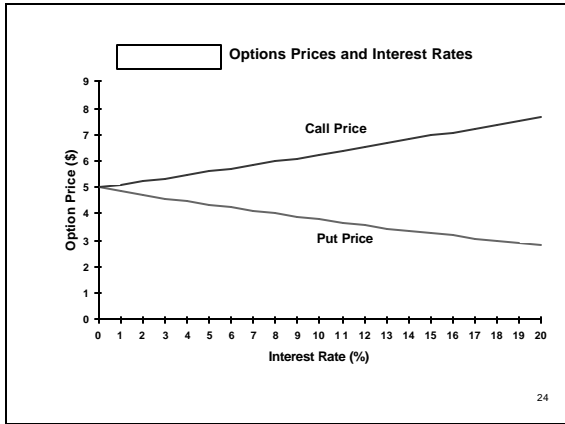


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Option Prices and Sigma



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Option Value Determinants

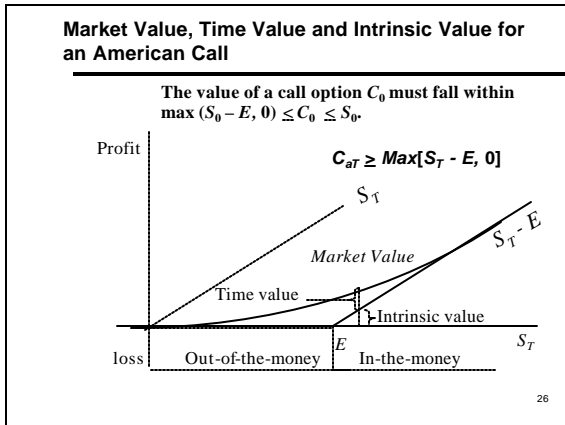
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Start part 2 of Ch. 22 slides

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