DERIVATIVE SECURITIES: OPTIONS

WHAT WILL YOU LEARN?

- What is an option contract?
- What are some key option terms?
- What are option payoffs?

OPTIONS

- An option contract gives its owner the right, but not the obligation, to buy or sell the 'underlying' asset at a fixed price on or before a given date.

CALL OPTIONS

- **A call option** gives the owner the right, but not the obligation, to buy the underlying by a certain date for a certain price.

PUT OPTIONS

- **A put option** gives the owner the right, but not the obligation, to sell the underlying by a certain date for a certain price.

OPTIONS

- Whereas it costs nothing to enter into a forward or futures contract, there is a cost to acquiring an option. This is called the **option premium**.
- American vs. European options

CALL OPTION EXAMPLE

- Consider a call option on a share of Microsoft with an exercise price of $20. Let's suppose that the expiration date is in four months, and the price of an option is $5.
- Suppose the current stock price $11.

PUT OPTION EXAMPLE

- Now consider a put option on IBM stock with an exercise price $90. Suppose the current stock price is $85, and the expiration date of the option is in three months. Option price is $7.

SUMMARY

- Definition of call and put options
- Definition of key option terminology
- Explain option payoffs and profits
- Next we look into forward and future contracts, and swap agreements

DERIVATIVE SECURITIES: FUTURES AND FORWARDS

WHAT WILL YOU LEARN?

- What is a forward contract?
- What is a futures contract?
- What are some key forward and futures terms?
- What is the difference between a forward and a futures contract?
- How do they differ from option contracts?

FUTURES AND FORWARD CONTRACTS

- Consider a crude oil producer and a manufacturing that uses crude oil.
- Both are concerned about the future price of crude oil.
- Both are concerned about price risk.
- Forward and futures contracts help manage this risk by sharing the price risk.

FORWARD AND FUTURES

- A **forward** or **futures contract** is an agreement between two parties to buy or sell an asset at a certain future time for a certain price.
- The party who commits to buying the asset has the **long position**.
- The party who commits to delivering the asset at contract maturity has the **short position**.

CORN FUTURES EXAMPLE

Month	Last	Chg.	Open	High	Low	Volume	Open Interest
Sep 2016	383'0	-1'0	383'0	385'4	381'6	8,466	98,657
Dec 2016	390'2	-1'2	390'4	392'6	389'0	18,768	155,964
Mar 2017	399'2	-1'2	399'6	401'6	398'4	502	19,778
May 2017	405'4	-1'2	407'0	407'2	404'4	62	2,539
Sep 2017	402'6	-1'0	402'6	402'6	408'0	0	1,380

Compiled from data obtained from Wall Street Journal January 27, 2016

PAYOFFS TO LONG AND SHORT FUTURES POSITIONS AT MATURITY

Month	Last	Chg.	Open	High	Low	Volume	Open Interest
Dec 2016	390'2	-1'2	390'4	392'6	389'0	18768	155964

FUTURES

- Unlike in the case of options, a futures contract **obliges** the long position to purchase the asset at the future prices, and similarly for the short position.
- No money is exchanged when the futures contract is entered into.

FUTURES

- Futures contracts are traded on organized exchanges.
  - Chicago Board of Trade (CBOT)
  - Chicago Mercantile Exchange (CME)
- Contracts are standardized to facilitate trading.
- The presence of a clearinghouse eliminates counterparty risk.
- A wide range of commodities (pork belly, live cattle, sugar, lumber, copper, etc.) and financial assets (stock indices, currencies, Treasury bonds, etc.) form the underlying asset in various contracts.

FORWARDS

- Forward contracts are traded over the counter.
- Contracts are customized.
- Foreign exchange forward contracts are widely used to hedge currency risk.

SUMMARY

- Definition of a forward and futures contract
- Learned key forward and futures terms
- Read futures prices data and compute payoffs
- Explain the main differences between futures and forward contracts and how they differ from options