Basic Goal: Understand how derivatives are used/priced.

Def: A derivative is a financial instrument whose value is derived from other more basic variables.

Ex: Stock options

§ 1.1 Exchange-Traded Markets

Def: Derivative Exchange is a market where standarized contracts are traded

Ex: Once two traders (A/B) decide on a trade they sign on a contract stipulating details for a future date. The exchange is in charge of the credit-worthiness of both parties.

§ 1.2 Over-the-Counter (OTC) Markets

- OTC market players are large financial institutions and banks. This market is much larger than the exchange market.

§ 1.3 Forward Contracts

Def: A forward contract is an agreement to buy/sell an asset at a certain future time/price.

- Contrast with a "spot" contract which is done immediately.
- Traded in OTC markets
- Let $S_T$ be the price of the asset at maturity and let $K$ be the

delivery price. Then the profit for the long/short positions is

<u>Long</u> $S_T - K$ 

<u>Short</u> $K - S_T$

## § 1.4 Future Contracts

- Forward contracts that can be traded on an exchange.
- In this way the market determines $K$. not just one person in a contract.

## § 1.5 Options

<u>Def</u>: A call option gives the holder the right to buy the asset at $T$ for price $K$.

A put option — " — right to sell — " —

$T$ – expiration date $K$ – strike/exercise price.

<u>Def</u>: American Options – Can be exercised at any time before $T$.

European Options – only exercised at $T$.

<u>Rmk</u>: Forward contracts cost nothing b.c. you <u>must</u> buy at $T$.

Options cost b.c. you have limited losses.

## § 1.6–1.9 Hedgers / Speculators / Arbitrageurs

Hedgers – goal is to reduce risk

Speculators – bet on future directions

Arbitrageurs – offsetting positions to lock in a profit.

§ 1.10-1.11 Dangers/ Conclusions

- These derivatives clearly give value to the 3 types of investors.

  How to valuate them is (a) hard (b) needed (c) the focus of this book.