

Why use derivatives instead of underlying assets?

- only way to trade underlying variables
- more customised pay-offs better to suited preferences
- way to take advantage of certain types of information
- greater implicit leverage for short horizons
- reduced transaction cost for short holding periods
- more favourable implicit borrowing and lending rates
- special tax and regulatory advantages

Why use options instead of futures?

- preference for non-symmetric pay-offs
- take advantage of information about the shape of the subjective probability distribution of the underlying asset price.

Consider again real-life examples involving forwards

- renting an apartment: agree to pay the rent at the beginning of each month for a certain period of time
- ordering a pizza: agree to pay the price in 30 minutes
- purchase of stocks: pay in 3 days the price agreed on the trade date

Contrast again (recall securities matrix
classification):

FORWARDS

versus

CASH TRANSACTION

Why would anyone prefer to make a forward transaction instead of a cash transaction?

Consider BP which has agreed to deliver 1,000 barrels of crude oil in a year but is worried that market prices may fall between now and then, and it will not be paid enough to cover its cost of production.

What can it do to eliminate such uncertainty?

Forwards can be used by:

- **Hedgers**, who already holds the underlying asset or has a precommitment to receive or deliver the underlying asset. The objective is make the outcome more certain by fixing the price of the asset to be delivered.
- **Speculators**, who use forward transactions to take on risk (i.e., betting on the market)

Mechanics of options markets

Options on stocks, currencies, stock indices and futures are traded on EXCHANGES

USA Exchanges

- Chicago Board Options Exchange (CBOE)
www.cboe.com
- NASDAQ OMX, which acquired the Philadelphia Stock Exchange in 2008. *www.nasdaqtrader.com*

USA Exchanges (continued)

- NYSE Euronext, which acquired the American Stock Exchange in 2008. ***www.euronext.com***
- International Securities Exchange.
www.iseoptions.com
- Boston Options Exchange.
www.bostonoptions.com

- Options trade on more than 1,000 different stocks
- One contract gives the holder the **right to buy or sell 100 shares** at the specified strike price and time in the future
- Foreign Exchange options: Most FX options are OTC but some exchanges exist.

Exchanges for FX options

- **US: NASDAQ OMX (European-style contracts).** One contract is to buy or sell 10,000 units of a foreign currency for US dollars.
E.g., a contract to buy or sell \$10,000 CAD for **USD. But, 1,000,000** units in the case of Japanese yen.
- **International Monetary Market (IMM):** One contract is for the delivery of £62,500.

Index Options

Stock index are not traded. So, what happens when someone writes options on indices?

One contract is to buy or sell **100 times the index** at the specified strike price in the future.

Settlement is always in cash rather than by delivering the portfolio underlying the index.

Example: Assume a call option contract on an index with strike price $K = 980$ and the terminal index at maturity of the contract is 992.

So the writer of the contract pays the holder $(992-980)*100 = \$1, 200$.

Types of traders

- **Hedgers** – use derivatives to reduce risk that they face from potential future movements in a market variable
- **Speculators** – use derivatives to bet on the future directions of a market variable
- **Arbitrageurs** – take offsetting positions in two or more instruments to lock in profit.

ARBITRAGE

This means taking simultaneous positions in different assets so that one is guaranteed a profit higher than the return given by the *T*-bills.

If such profits exist, we say that there is an *arbitrage opportunity*.