Definition; Some types

- The payoff of a Barrier option is path dependent

- More precisely, the payoff depends on whether over the option life the underlying price reaches the barrier; note that this is a simplistic view of things - the stock prices are observed at discrete times and the wording above implies continuous observation of stock prices

- Knock-out options go **out of** existence if the asset price reaches the barrier; the variants are

↓ down-and-out: has to fall to reach the barrier

↑ up-and-out: has to rise to reach the barrier

- Knock-in options come **into** existence if the asset price reaches the barrier; the variants are

↓ down-and-in: has to fall to reach the barrier

↑ up-and-in: has to rise to reach the barrier Some examples of situations when Asian options are useful are:

- Not that a "sum" of a knock-in and a knock-out option is equivalent to the "ordinary" option

Rebate options

- Rebate options make a fixed payment if the asset price reaches the barrier; we have

↓ down rebates: has to fall to reach the barrier

↑ up rebates: has to rise to reach the barrier

- More complex barrier options require the asset price to not only cross a barrier, but spend a certain amount of time across the barrier in order to knock in or knock out