

PROBLEMS 5. 1.3.2016

The current price of gold is \$1,146 per ounce: say \$ 1,150 per oz. for round figures.

In a year's time, the price of gold will be up to 1200 with probability $p \in (0, 1)$, and down to 1050 with probability $1 - p$.

Neglect interest.

Q1: *Pricing.* Price a call option C for an ounce of gold in a year's time, with strike price K the current price 1150 (that is, find the *no-arbitrage price*).

Q2: *Hedging.* The option is financially equivalent to a combination (or *portfolio* Π) of cash and gold: *which* combination?

[The combination is called the *hedge*, or hedging strategy: holding it enables us to sell the option, and prepare to meet the resulting claim against us (if any).]

Q3: *Arbitrage.*

(i) You see C being traded now for \$ 40. What do you do?

(ii) You see C being traded now for \$ 20. What do you do?

NHB