

# FLASH ANSWERS

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## **Chapter 1 : Intro**

### Forward

1. Obligation to buy (sell) an underlying at a certain time at a pre-defined price.
2. Forward = OTC; Future = Exchange Trade
3.  $Fwd = Spot \times (1 + \text{Free-risk Rate})^T$

### Option

1. Right to buy (sell) an underlying at a certain time at a pre-defined price.
2. Me ? Yes, I can.
3. V-shape. Forward at price K.

### Structured Product

1. At least 2 building blocks of derivatives and fixed income.
2. ...

## **Chapter 2 : Futures & OTC**

### Market place vs OTC

1. Pre-defined characteristics. Liquidity. Exchange traded.
2. Tailor-made. "Illiquid". Phone market.

## **Chapter 3 : Swap**

### Swap

1. 0
2. Enter in a swap starting in 1 year for 10 years. Payer of fixed rate.

### Cap, Floor & Swaption

1. Buy a Cap.
2. Swap 4.5% for 5 years.
3. Buy a Swaption for 200M starting in 1 year for 10, where you will pay the fixed rate.

## **Chapter 4 : Forward**

### Capitalisation and actualisation, short selling

1.  $1/DF(10)$
2.  $DF(10)$
3. ...
4. Borrow and sell an asset.

### Forward, FRA

1. 1060.90
2. No

## ***Chapter 5 : Interest rate***

### ZC

1. A rate to be used in a ZC-formula : no intermediary coupons.
2. If ZC discret :  $DF = 1 / (1+ZC)^T$  or if ZC continu :  $DF = \exp(-ZC \times T)$ .

### Bootstrap method

1. Coupon rate to ZC-rate
2. ...

### Forward

1. 4.01%

## ***Chapter 6 : Option market***

### Option market

1. 0
2. Positive
3. Out of the money

## ***Chapter 7 : Property***

### Option property

1. Exercise at anytime.
2. Higher
3. Lower

## ***Chapter 8 : Strategies***

### Strategies

1. ...
2. ...

### Greeks

1. "0 - 50% - 100%"
2. "-100% to 0"
3. Look like a S.
4. None

## ***Chapter 9 : Cox & Delta***

### Valuation and Delta

1. Start to value the derivatives at the maturity date and come back to today.
2. No risk = no prime
3. Short more underlying : look at your Gamma !

## ***Chapter 10 : Stock behaviour***

### Stock behaviour

1. Simulate numerous path then pay-off, actualize them and take the average for the price of the derivative.
2. +10 for a stock at 100 € is different than +10 for a stock at 20 €.
3. Normal Law.
4. ...

## ***Chapter 11 : B&S Model***

### Stock behaviour

1. cf. Monte Carlo course
2. ...
3.  $S'$

### B&S

1. ... -  $r = ZC$
2. No : smile !

## ***Chapter 12 : Monte Carlo – Generalisation of B&S***

### Monte Carlo

1. Loi Normal Inverse (Alea())
2. ...

### Generalisation of B&S

1. 2.79%
2. ...

## ***Chapter 13 : Greeks***

### Delta

1. Sell EUR 500 000 ag USD
2. Call of strike 100 => delta = 100% like the underlying
3. “100%”

### Gamma

1. No gamma
2. Long gamma

## ***Chapter 14 : Exotics options***

### Second generation

1. Cost and unique pay-off
2. Liquidity, price

### Barrier option

1. Call down & out

2. Call up & in
3. Buys Call 100 KO 80, Sell Put100 KO 80.