**Black Scholes Model**

The Black Scholes model is a mathematical model of a financial market containing derivative investment instruments. From the model, one can deduce the Black Scholes Formula, which gives a theoretical estimate of the price of European-style options.

The formula derived is a partial differential equation, which estimates the price of the option over time. The key idea behind the model is to hedge the option by buying and selling the underlying asset in just the right way and, as a consequence, to eliminate risk. This type of hedging is called delta hedging and is the basis of more complicated hedging strategies.

The Black Scholes model assumes that the market consists of at least one risky asset, usually the stock, and one riskless asset, usually cash or bonds.

Then you can make assumptions on the assets:

* Riskless rate – the rate of return on the riskless asset is constant
* Random walk – the instantaneous log return of stock price is an infinitesimal random walk with drift. The assumption is that the drift and volatility is constant.
* The stock does not pay a dividend.

Assumptions on the market:

* There is no arbitrage opportunity (i.e. you can no benefit from a price discrepancy between 2 markets, or obtain a riskless profit)
* It is possible to borrow and lend any amount at the riskless rate
* It is possible to buy and sell any amount, of the stock (including short selling)
* The above transactions do no incur any fees or costs (frictionless market)

With these assumptions in place, suppose there is a derivative security trading in the market. We specify that this security will have a certain payoff at a specified date in the future, depending on the value(s) taken by the stock up to that date. The derivative’s price is completely determined at the current time, even though we do not know what path the stock price will take in the future. For European call or put options, the model shows that “it is possible to create a hedged position, consisting of a long position in the stock and a short position in the option, whose value will not depend on the price of the stock”.

**Derivatives**

In finance, a derivative is a contract that derives its value from the performance of an underlying entity. Some of the more common derivatives include forwards, futures, options, swaps, and variations such as collateralized debt obligations and credit default swaps.

**Commodity Futures Trading Commission**

CFTC is an independent U.S. Federal agency that regulates the commodity futures and options markets. Its goals include the promotion of competitive and efficient futures markets and the protection of investors against manipulation, abusive trade practices and fraud.

The CFTC consists of five committees – agriculture, global markets, energy and environmental markets, technology, and cooperation between the CFTC and SEC.