More Options!

Q1

A volatile stock that moves up as often as it does down may still seem like an unnecessarily risky proposition. Volatility can be turned into a good thing for investors hoping to make money in downturns. Traders can also trade on the VIX or use options contracts. Rising volatility will lead to a healthier market. No longer will everyone be on the same side of every trade, taking the same bet that an individual stock or an index will go up or down.

While a highly volatile stock may be a more risk-producing choice, a small amount of volatility can actually mean greater profits. As the price fluctuates, it provides the opportunity for investors to buy stock in a solid company when the price is very low. In times of high volatility, options are an incredibly valuable addition to any portfolio. The long straddle option strategy is a good way when a trader thinks the underlying asset will move from a low volatility state to a high volatility state. Options help leverage the volatility.

Reason for Volatility

1. Political and economic factors

Trade agreements, legislation, policy. Everything from speeches to elections can cause reactions among investors, which influences stock prices.

Economic data also plays a role. Monthly jobs reports, inflation data, consumer spending figures and quarterly GDP calculations can all impact market performance. In contrast, if these miss market expectations, markets may become more volatile.

2. Industry and sector factors

Specific events can cause volatility within a particular industry and sector. In the FMCG sector, for example, a major HUL sell-off drove down the industry stocks like ITC, Marico down with it before recovering off late.

Similarly, more government regulation in a specific industry could result in stock prices falling, due to increased compliance and employee costs that may impact future earnings growth.

3. Company performance

Volatility isn’t always market-wide and can relate to an individual company.

Strong earnings report or a new product that is wowing consumers, can make investors feel good about the business. In contrast, a product recall, data breach or bad executive behaviour can all hurt a stock price, as investors sell off their stocks.

4. Health emergencies/Natural global disasters
As evident right now!

5. Recession/Financial Crisis
2008 is a good example.

Q2

The two terms in B-S equation can be thought of as the amount received - the amount paid at time T. So, the S*N(d1)*e^(rT) will be the price received if it finishes ITM, and the X*N(d2) is the payment upon exercising the option. Hence, N(d2) can be thought as the probability of exercising the option. Mathematically, N(d1) is the delta of the call option itself (Aaaah!).

Q3

Delta can also be explained in terms of the approximate likelihood of an option expiring ITM.

- A deep in the money option has a really high chance of expiring in the money, around 100%, and it has about 1 delta
- A far out of the money option has a really low chance of expiring in the money, around 0%, and it has about 0 delta
- An at the money option has about 50% probability of being in the money because there is a 50-50 chance the stock will go up or down, and it has about 0.5 delta

Q4

By definition, gamma measures change in delta. For a (long) call, increase in underlying would increase the chance of being ITM, hence change in delta = +ve. For a (long) put, increase in underlying would increase the chance of expiring OTM, so delta goes from -1 towards 0, again change in delta = +ve. Hence, gamma is always positive for long options. A short call/put will similarly have negative gamma. Negative gamma can also arise for a specific trading strategy like spreads/straddles etc.

Q5

Delta = 0.5, Gamma = 0.02, Change in underlying = 100

Since, this is an ATM type option, there will be rapid change in delta at this stage, indicated by how gamma is huge(2%).. Also gamma will fall rapidly as we move away from the said value. Delta*change would not be a good estimate of change in option price in such a case.

A quick taylor series calculation for call price - C1 = C + delta*x + ½*gamma*x*x , should give some better estimate.

Q6

When gamma is positive, theta tends to be negative. The portfolio declines in value if there is no change in S, but increases in value if there is a large positive or negative change in S. When gamma is negative, theta tends to be positive and the reverse is true: the portfolio increases in value if there is no change in S but decreases in value if there is a large positive or negative change in S.

Q7

I would like to answer this using a simple example of a call option and trying to go through the thought process of a seller. In the three scenarios that can prevail, (namely ITM,ATM,OTM) two of them would make more money for the seller than the buyer giving a slight statistical edge. However, this in no way means that there's more chance of making money by selling.

A general trend that can be observed is that panic downturns spread much faster and are bigger in absolute terms than rallies. If an investor is anticipating a large economic shutdown, and panic spreading it makes sense to short/sell. Once the panic seeps in the buyers would be desperately stuck in long positions and any chance of small profits would invite selling. The increase in volatility although could in the sense mean more chance of expiring ITM, but combined with a negative outlook would generally imply a major shorting opportunity. If they might not have even anticipated this, slightly OTM options always in short term make sense money wise for sellers.. And as the markets fell they must've changed strategies to get a net short position because of course they would also be betting on calls with some other underlying. Hedging etc strategies allow for such risk exposures.

Since the expectation is that the stock prices won’t increase, selling the call option and collecting the premium can be perceived as a good trading opportunity.