Assignment 4

*Parliamentary election impact on Indian capital markets*

# Question 1

I will focus on four strategies as illustrated in the case study:

1. **Long Call**: Buy a call option at a specific strike price. An aggressive strategy, betting on a strong market uptrend.

**Formula**: Payoff = MAX (0, Expected Nifty Level - Strike Price) - LTP

1. **Bull Call Spread**: Buy a lower strike call and sell a higher strike call to limit potential profit and reduce cost. A more conservative approach to limit costs and gains.

**Formula:** Payoff = MAX (0, Expected Nifty Level - Lower Strike) – MAX (0, Expected Nifty Level - Higher Strike) - Net Premium

**Net Premium Paid:** LTP (Lower Strike) - LTP (Higher Strike)

1. **Long Straddle**: Buy both a call and put at the same strike price. A volatility strategy to profit from large movements in either direction.

Formula: Payoff = MAX (0, Expected Nifty Level - Strike Price) + MAX (0, Strike Price - Expected Nifty Level) - Total Premium

**Total Premium**: LTP (Call) + LTP (Put)

1. **Long Strangle**: Buy a call at a higher strike and a put at a lower strike, anticipating high volatility. A cost-effective volatility strategy with a wider price range than a straddle.

**Formula:** Payoff = MAX (0, Expected Nifty Level - Higher Strike) + MAX (0, Lower Strike - Expected Nifty Level) - Total Premium

**Total Premium**: LTP (Call) + LTP (Put)

# Question 2:

Exhibit 6 provides the actual closing Nifty index value on May 18, 2009 (4,323.15) and detailed information on the options’ Last Traded Price (LTP) for that day.

I will assume that call, put or their combination is bought on 15th may and sold at 18th may.

Thus, the expected Nifty level I will use for calculations is 4323.15.

1. **Long Call:**

For each available call option, I calculated payoffs by assuming the options were exercised on 18th. The payoffs were thus MAX (0, 4323.15 – Strike Price) – LTP for each call option. The Maximum payoff was from call option with strike price 3300, payoff being 586.3 per call option.

1. **Bull Call Spread:**

While a lot of combinations are possible to create various kinds of Bull call Spreads, I have taken the following pattern. Buy a call and selling the call with strike price just above its own. For example, buying call with strike price 3900 and selling call with strike price 4000. Payoffs will be compared for each such set.

Maximum profit was obtained by buying call with 4200 strike price and selling call with strike price 4300, payoff being 92.95 per set. While the payoff is much less compared to the Long Call strategy, the initial investment as well as the risk is also less.

1. **Long Straddle:**

Since the actual Nifty price level was so high (4323.15), the put options were never exercised and thus they ended up just extra expenditure. The strategy ended up being in heavy loss if one bought both call and put at high strike price. For example, if one bought call and put at 4300, the payoff was -611.3. We did have a profit when 3300 strike price call and put were bought together (payoff 540.15), mainly due to the call bring high profit.

1. **Long Strangle:**

While multiple combinations of long strangle can be formed, I tested for one pattern. I bought a call and put with the strike price of put just above that of call. For example, buying a call at strike price 3900 and put at strike price 4000. Payoffs were compared for all such combinations.

This also followed payoff patterns like long straddle. The maximum payoff was 523.15 with buying call at 3300 and put at 3400 strike prices.

# Question 3:

To explore the hedging effectiveness of options for ICICI Bank and Reliance, I assumed I owned the stock on 15th. I compared the value of the portfolio with and without hedging. First, I considered the value of the as given on 19th. Then I also considered the case if value had fallen instead. Value of unhedged stock would be the value of stock I considered.

I have used two hedging strategies Protective Put and Covered Call.

1. **Protective Put:** This strategy involves buying a put option on a stock that you own to protect against downside risk. This strategy limits potential downside by providing the right to sell the stock at a predetermined strike price, protecting against significant losses if the stock price falls.

Protective Put Payoff: Max (Stock Price on May 19, Strike Price of Put) − LTP of Put (May 15) - Stock Price on May 19

Closing Price on May 15th: ICICI = 574.7, Reliance = 1950.7

Strike price of Put used to hedge: ICICI = 560 @ 29.1, Reliance = 1950 @ 84

Value on May 19th: ICICI = 756.15, Reliance = 2230.9

Under these conditions the yield is net gains – Premium paid on 15th. However, if the price were to drop, the put would provide protection, ensuring a descent sale price if stocks had to be liquidated. The value of put would have also risen, offsetting the losses due to stock position.

1. **Covered Call:** This strategy involves holding the stock and selling a call option against it to generate income that offsets potential declines in the stock. This strategy generates income that can offset potential declines in the stock, making it a useful hedge if the market remains flat or slightly bearish. However, it limits upside potential if the stock price rises above the strike price of the call.

Covered Call Payoff=min (Strike Price, Underlying Price on May 19) + Premium Received on 15 - Stock Price on May 19

Closing Price on May 15th: ICICI = 574.7, Reliance = 1950.7

Strike price of Call used to hedge: ICICI = 580 @ 31.75, Reliance = 1980 @ 72.15

Value on May 19th: ICICI = 756.15, Reliance = 2230.9

On May 19, the prices of both stocks increased. This resulted in the call options being exercised. In this case, the call option premium collected on May 15 would provide a limited buffer, but the upside potential would be capped.

# Question 4:

**High Performers**: DLF (up 46.1%), L&T (36.4%), and SBI (32.4%) show significant gains. These stocks reflect sectors that may have been positively impacted by the political outcome, as certain sectors respond well to stability and growth policies.

**Moderate Performers**: Tata Steel (up 21.3%) and HDFC Bank (19.8%). These companies may experience steady gains due to stable market conditions and positive investor sentiment, without extreme fluctuations.

**Low or Negative Performers**: Cipla (down -1.6%) and Hindustan Unilever (up only 2.4%). These stocks might belong to sectors less sensitive to political changes, like pharmaceuticals or consumer staples, which are considered more stable and less volatile.

**Sector-Specific Sensitivity**:

**Infrastructure and Construction**: Stocks like DLF and L&T gained significantly due to expectations of pro-growth policies favouring infrastructure development.

**Banking and Financial Services**: With high returns for SBI and HDFC Bank, the financial sector benefited from the likelihood of a stable government that could ease credit and encourage investment.

**Market Sentiment and Policy Expectations**:

**Heavyweights with High Market Impact**: Stocks with high market capitalization, like Reliance, saw gains as they drive overall index movements.

**Defensive Sectors**: Sectors like pharmaceuticals (Cipla) and consumer goods (Hindustan Unilever) are less reactive to market sentiment shifts, as their demand remains relatively stable.

**Political and Economic Factors**:

**Stability and Growth-Oriented Policies**: The election outcome indicated market-friendly policies, boosting investor confidence in sectors directly tied to economic expansion, such as real estate, infrastructure, and financials.

**Global Economic Trends**: During this period, India's resilience to the global financial crisis made it an attractive market, particularly for sectors that might benefit from increased foreign investment.

The varied performance among stocks illustrates how individual sectors respond differently to political and economic developments, influencing their return potential based on perceived growth prospects and sector stability.

# Question 5:

When Nifty may hit lower circuits, plunge, or stay highly volatile, several options strategies can manage risk and leverage volatility. Using data from Exhibit 2, I identified three effective strategies: Protective Put, Long Straddle, and Long Strangle. Each suits specific market conditions, especially during periods of uncertainty.

Exhibit 2 provides data from January 16 to January 29, 2008, a period characterized by sharp fluctuations in Nifty’s value. Over these trading days Nifty’s Open-Closevariation was large, with a consistent downtrend indicating high volatility. EX: On January 21, 2008, Nifty dropped from an open of 5,705.00 to close at 5208.35, a significant decline of 496.2 in a single day. Calculating daily percentage changes shows multiple instances of 3%-9% declines, suggesting that certain options strategies (such as those benefiting from volatility) could be profitable in such conditions.

**1. Protective Put:** The Protective Put strategy involves buying a put option to hedge against the risk of a substantial drop in Nifty. If Nifty continues to fall, the put option increases in value, offsetting some of the losses in the underlying portfolio.

For this hypothetical hedge, let’s say Nifty is trading near its January 16 opening level of 6,065. By purchasing a put option at a strike near 6,000, we create a “floor” for losses. If Nifty experiences a sharp decline, as it did on January 22, the protective put would provide a payoff approximately equal to the difference between the strike price and the new lower price, mitigating losses in the portfolio.

**2. Long Straddle:** A Long Straddle strategy involves buying both a call and a put option at the same strike price, benefiting from significant price swings in either direction.

For instance, with Nifty’s high volatility, we could set the strike price near the January 16 opening (6,065) by buying both a call and a put option at this level. During January 2008, Nifty’s high-low daily range often exceeded 200-300 points. On January 21, for example, it dropped from 5,705 to a low of 4,977 within the same day, a massive 12.8% intraday swing. his strategy would have been profitable as either the call or the put option would increase in intrinsic value with these large price movements, offsetting the combined premium cost of the two options.

Given the strong daily fluctuations, a Long Straddle would likely yield a positive return, capturing gains regardless of Nifty’s directional movement.

**3. Long Strangle**

The Long Strangle strategy is like a straddle but involves buying a call and a put at different strike prices. It’s generally cheaper than a straddle but still allows for gains when Nifty undergoes large price swings. For a Long Strangle on January 16, I would choose a call strike price slightly above the Nifty open (e.g., 6,100) and a put slightly below it (e.g., 5,900). During this period, Nifty’s movement often reached these ranges, such as on January 22, when it closed near 4,900. Such volatility would drive the put option in-the-money while minimizing initial premium costs compared to a straddle. The Long Strangle would perform well in a high-volatility environment like January 2008 by benefiting from large downward movements, while the call provides additional upside if prices rally back.