Options Hedging Optimization

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Given:

n long ITM call contracts
m written (short) OTM call contracts
o long put contracts.
s shares of underlying equity (presume of all the same stock)
The function $f(x)$ which calculates the option payoff $\forall$ options $x \in \{n, m, o\}$
The function $g(x)$ which calculates the option premium $\forall$ options $x \in \{n, m, o\}$

$$\textit{maximize} \quad \sum_{i=0}^{n} f(i) + \sum_{j=0}^{m} f(j) + \sum_{k=0}^{o} f(k)$$

$$\textit{minimize} \quad \sum_{i=0}^{n} g(i) + \sum_{j=0}^{m} g(j) + \sum_{k=0}^{o} g(k)$$

Subject to
$n + o \leq \lfloor s/100 \rfloor$;
$m \leq n$;
$n \leq o$;
Assumptions:

- Given screening of liquid contracts, the max amount of contracts for a certain strike price can be bought iff. the desired number of contracts is less than or equal to the Open Interest. This is not a good approximation, but we don't have access to level 2 data. However, given the correct amount of
- If unable to get all the desired contracts due to liquidity, the best combination of multiple contracts will be selected. This may entail selecting a range of strike prices and averaging out the payoff/cost.
- We will not take into account implied volatility as while this changes the current price of the contract it does not affect the payoff. Furthermore, any of the greeks do not need to be taken into consideration when choosing the right contract.