Delta Hedging a long VX and ES portfolio

1.
Critical Assumption:

$$\Delta P_{VIX} = \Delta P_{SPX}(-\ 0.7)$$

2.

$$\begin{aligned} & Long\ 2\ VX \approx\ 2\ delta \\ +\ & Long\ 1\ ES \approx\ \frac{-10}{7}\ delta \end{aligned}$$

Total = 4/7 delta

3. Long *x* puts on VIX *or* long *y* on SPX such that total delta is around 0

4. Implement delta hedge
- Maintain 0 delta
- Dynamically adjust after +/- 0.3 change in delta
  - Long puts on VIX
  - *Or* long calls on SPX

5. Addressing assumptions

The big assumption is assuming a -0.7 correlation between the price change in VIX and SPX. Further work will be put into a dynamic calculation of the correlation but this is simply a place to start. This is a basic delta hedging strategy with major assumptions. Again, this is a starting place for me to dynamically hedge my portfolio.