Background: Quarterly earning announcements can cause potentially extreme moves in individual equities as companies under/over perform relative to expectation. These are previously announced events with known times, giving both day traders and large institutions the opportunity to place volatility and directional bets in the options marketplace, capitalizing on market reaction and the sentiment to the report.

Hypothesis:

Stocks experience higher than average realized volatility around quarterly earnings announcements.

The average realized volatility of an individual equity stock through its historical earnings reports relative to its baseline performance is predictive of how much we would expect it to move on an upcoming earnings press release.

If the shortest dated at the money options for an issuer is priced on an implied volatility higher than our prediction for realized volatility going into an earnings, there is a positive expected value in selling the at the money straddle. If the straddle is priced below our prediction for realized volatility, there is a positive expected value position in buying the straddle.

Necessary Data:

1. Historical Earnings Dates for stocks in ‘Stocks’
2. Close Price Data for stocks in ‘Stocks
3. Option Bid/Ask Price, Implied Volatility for shortest dated 50d at the money put and call options at the close over the week of earnings

Execution:

For each stocks in ‘’Stocks”, calculate:

1. Close to Close historical realized volatility numbers
2. Historical Realized Volatility through Earnings numbers

At the close on the day before earnings, compare our prediction for realized volatility over the next day to where the market is currently pricing the event volatility. Sell 10k notional of the straddles if implied volatility > realized volatility by some threshold. Buy 10k notional of the straddle if implied volatility < realized volatility. No underlying hedge in the futures market and we do not hedge the gamma on underlying moves.

Buy back the same strike straddle on the close of the day following the earnings announcement. Always close the position to flat.

Assumptions:

We can execute our full 100 at the market bid and ask at the close prices. Significant assumption, we intentionally are choosing trade dates where we expect a lot of activity in the options market for the stock. There might be a lot of liquidity, but the trading could be very directional and I’d imagine displayed markets (especially at the close) could be very small up.

Concerns:

Good chance we will have to cross a very wide bid/ask to execute our straddle trade that will reduce some of the edge we see in the position.

Selling straddles is a very risky strategy, will need stop losses and understand how much capital we have at risk to set them well.

There aren’t too many data points for previous earnings numbers (4 per year per company) and it might be that there isn’t enough statistical significance in the observations.

Finally, we might find that movements on past earnings aren’t all that indicative of how we expect the stocks to move on future movements. Maybe this will be more dictated by the current business fundamentals of the company or the regime of the overall market. I think to an extent, we can look for other factors to enhance our realized volatility prediction but it might just be that they are incredibly hard to predict without having a strong grasp of the performance of the individual companies.

Additional things we may need to consider:

Sizing our opening trade size based on the difference in realized vs implied (instead of using 10k notional each trade opportunity) Might be a threshold where we decide not to execute any trades (to close to warrant a position)

Borrowing/lending rates.

Some hedge for part of the straddle position.