

1 Introduction to My Research

In previous financial crises, it is clear that Chinese stock market usually experienced greater volatility than the stock markets in the developed countries. One key difference between Chinese financial system and developed financial system is that there is no option market in China. Many research on the stock option reveals that, in imperfect world, informed traders tend to use stock options to perform arbitrage or speculation. Therefore, I hypothesized that the stock markets in the developed countries are less volatile because the stock option markets attract informed traders thus the volatility caused by their trading activities. Therefore, in my research, I intend to show that there is a relationship between the option open interest and the underlying stock return volatility because the option open interest indicates the outstanding option contracts—the increase in the option open interest may indicate that informed traders change their positions based on private information they have. If the underlying stock return volatility decreases when the option open interest increases, I can probably infer that the option market absorbs volatility from the stock market when there is private information. Other traders observe what happens in the option market then act. This is why the existence of a stock option market reduces the volatility in the stock market.

2 Graphs

My data consists information of many publicly traded firms, including the open interest for various types of stock options, stock return volatility, and other controlled variables. Clearly, I have time series panel data. However, my variables may behave very differently. Therefore, I plot the option open interest for each firms against time and the stock return volatility for each firm against time.



Figure 1: The Option Open Interest of Company AA vs. Time

Taking the company AA as an example, its open interest clearly displays some seasonality: there are around four peaks each year.

From the chart below, we can see that company AA's stock return volatility clearly displays both a trend and seasonality: the graph shows a decreasing in volatility in the long run, meanwhile, there is a peak around the middle of a year.

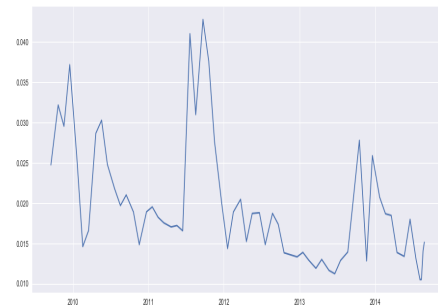


Figure 2: The Stock Return Volatility of Company AA vs. Time

From the graph below, we can see that there seems to be a linear relationship between the change in option open interest and change in the underlying stock volatility. However, the slope seems to be flat. It may be because I did not normalize my data—change in open interest is in thousands, but volatility changes in percentage.

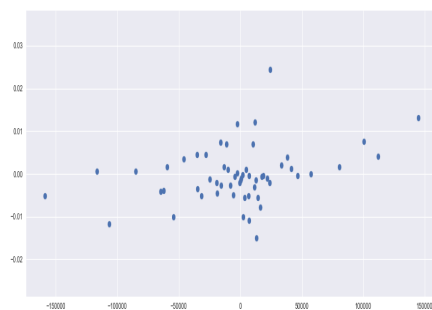


Figure 3: $\Delta openinterest$ vs. $\Delta returnVolatility$