Volatility Spreads and Earnings Announcement Returns.

1. Introduction.

--Prior researches has found out that implied volatility spreads (difference between call and put implied volatilities) predict equity returns.

--This study focus on the power of prediction of implied volatility spreads on an **informationally intensive event** such as the earning announcement.

--If some investors have private information about future equity prices, they would demand more call or put options which will enlarge the spread of implied volatilities of call and put options.

1. Methodology and Data

--Measuring Volatility Spreads:



*VS:* single volatility spread measure for stock i on trading day t.

*N:* the number of put and call pairs on day t for stock i.

*IVput and IVcall:* implied volatility of put and call pairs j on trading day t (with **same strike prices** and **expiration dates. )**

*W:* open interest (total number of outstanding contracts held by all participants) of option pair j.

--Data: Ivy DB Option Metrics. Jan 1996 to Sep 2008. 600,000 options per month at beginning. 4,000,000 per month at end.

--Implied volatilities were calculated by binomial tree and interest rates derived from LIBOR rates (Black-Scholes formula)

--Data of Earning announcement dates (day 0) from COMPUSTAT.

1. Analysis:

--Table 1: data overview.

Panel A: 1. Average volatility spreads are positive. Indicating that put were more expensive than call on average. 2. Volatility spreads are highly right-skewed.

Panel B: Distribution of volatility spread become less pronounced in later period.

--Table 2: Pre-formation characteristics. Volatility spreads are measured on day -1.

Panel A: stock size, market-to-book ratio vary from different spreads Quintiles. It is important to control these variables in the subsequent analysis.

Panel B: Stocks with relatively expensive call options perform significantly worse than stocks with relatively expensive put options. Lagged weekly stock returns should be controlled in the panel regression.

--Table 3: Post-formation return. Volatility spreads are measured on day -1. Return are measured during day 0 and 1.

Abnormal return is statistically significant. Indicating that volatility spreads have prediction ability.

--Table 4: Subsample Analysis: 1996-2002 and 2003-2008

degree of predictability has stayed strong overtime

--Table 5: The role of option liquidity.

Volatility spreads have stronger predictive power when options are more liquid.

--Table 6: the Role of information Asymmetry: Use PIN to measure the degree pf private

Information available in the market.

Panel A: regression of volatility spreads on PIN and other factors. The result is that higher PIN tend to have higher volatility spreads.

Panel B: PIN has strong predictive power.

Panel C: Informed traders prefer using option market when underlying stocks are less liquid.

1. Regression Analysis

Table 7: dependent variable: return on day 0 and 1. Factors: Level of volatility spread, Change of volatility spread.

--Coefficient of level and change of volatility spreads are significantly negative respected to future announcement return.

--returns preceeding earning announcements have significantly negative relationship with announcement returns.

Table 8 : The role of Information Asymmetry and Stock Liquidity,

--Stronger announcement return predictability when underlying stock have more information asymmetry.

--liquidity is important to predict announcement return.

1. Conclusion

--Stocks with relatively expensive call options earn significantly higher returns during two-day announcement window.

--information events such as earning announcement period is important to predict equity return.

--The degree of announcement return predictability is stronger when informed investors are more likely to trade in the option markets

--the predictability is stronger when options are more liquid and underlying stocks have more information asymmetry.