

EQUITY MARKET: EXPLOITING OPTION INFORMATION

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In our study, we examined whether public information in the option market predicts cross-sectional stock returns for a well-investable universe of highly liquid U.S. large-cap stocks and thus provides valuable, exploitable information for equity investors. Equity options have become an increasingly popular investment alternative over the past decades. They have asymmetric payoff characteristics and allow investors to take highly leveraged positions, making them important instruments for speculation or hedging. Options afford investors a view of the price development and risk of the underlying stocks. In fact, option prices reflect the expectations and worries that investors have about future stock price developments. Therefore, many practitioners view the equity option market as a primary source of information about the expected return, risk, and sentiment of individual stocks and the equity market in general. The question is whether this public information also provides valuable information to investors. That is, can investors exploit this information?

Standard economic theory suggests not. Indeed, several recent studies have proposed option market measures that contain economically and statistically significant information for subsequent returns on the associated stocks. Xing, Zhang, and Zhao (2010) used the difference between the implied volatilities of out-of-the-money put options and at-the-money call options, commonly referred to as the out-of-the-money volatility skew, a measure that reflects the (informed) worries investors have about negative price movements. They found that stocks with the largest skew underperform stocks with the smallest skew. Bali and Hovakimian (2009) used the difference between realized and implied volatilities, a measure that captures the volatility risk of a stock. They found that a strategy that buys stocks with the lowest realized versus implied volatility spread and that shorts stocks with the highest spread produces significant positive returns. Bali and Hovakimian (2009) and Cremers and Weinbaum (2010) used the spread between implied volatilities of at-the-money put versus call options, also known as the at-the-money volatility skew, which they argued captures the trading activity of informed investors and jump risk. Stocks with a low spread (i.e., stocks that have higher call than put implied volatilities) outperform stocks with a high spread. In addition, Cremers and Weinbaum (2010) used the recent change in the spread between the implied volatilities of at-the-money put and call options, which might capture the change in informed trading, and found a negative relation with stock returns.

These studies revealed the strong predictive power of public option market information for stock returns over 1996-2005. However, they all focused on a broad universe of stocks, which might not be exploitable for most practitioners owing to their liquidity constraints and needs.

Moreover, these studies did not analyze the impact of transaction costs on profitability. Some of the studies also showed a declining performance toward the end of their samples and omitted the highly volatile period around the subprime crisis, a time when many equity funds were closed. Given the relatively short sample period of the studies on this topic, these extra years are highly relevant.

In our study, we examined whether these four measures – out-of-the-money volatility skew, realized versus implied volatility spread, at-the-money volatility skew, and the change in the at-the-money volatility skew – provide valuable information that is exploitable by equity investors. To that end, we (1) studied these strategies with respect to a well-investable universe of U.S. large caps (i.e., the stocks that practitioners find most attractive owing to their liquidity), (2) extended the sample to include the recent, volatile crisis period, (3) examined the combined predictive power of the four variables in an integrated option information strategy (from a practitioner's perspective, it is important to know whether performance improves when the variables are combined), and (4) thoroughly analyzed the impact of transaction costs. In addition, we examined the robustness of the option information strategy in various market conditions, as well as its interaction with information uncertainty.

In presenting our results we showed that publicly available information extracted from traded equity options contains valuable information for future stock returns. Trading strategies based on worries about negative price movements (i.e., out-of-the-money volatility skew), volatility risk (i.e., realized versus implied volatility spread), informed trading and jump risk (i.e., at-the-money volatility skew), and the change in informed trading (i.e., the change in the at-the-money volatility skew) yield significant returns and alphas. The performances remain significant after correcting for market, size, value, momentum, reversal, and other return-predicting factors. Hence, we found that the option information strategies are substantially different from other well-known stock selection strategies. These findings extend the results of earlier studies to a well-investable universe of liquid U.S. large caps, a universe highly relevant for equity investors. Moreover, a combined option information strategy produces even stronger results, with an annualized performance of around 10%, thereby strengthening the relevance of the publicly available information contained in option prices for equity investors. Although several studies have reported that the predictive power of option market variables decreases over time, we found significant returns also in recent out-of-sample years. These results are robust for bull, bear, volatile, and calm markets and are generally of similar magnitude for stocks with low or high information uncertainty. In addition, the documented anomalies are at least as strong when applied to the 100 largest stocks. We further found that the profitability of the combined option information strategy can be dramatically reduced by transaction costs because exploiting the option information measures requires extremely high turnover. However, the strategy remains highly profitable when focusing on a low-transaction-cost universe

and using simple procedures to reduce transaction costs – annual net returns above 7% can be achieved. This finding suggests that information diffuses gradually from the equity option market into the underlying stock market.

We documented that the four option variables are strong predictors of individual stock returns and thus are relevant for practitioners. Interestingly, the option information strategies differ substantially from other well-known stock selection strategies, such as momentum and value, commonly used by practitioners. Finally, one may raise the question whether these effects are expected to persist in the long term. Although time must ultimately answer this question, several points may be worth considering here. First, we provided out-of-sample evidence on the predictive power of the four option variables, suggesting that their profitability is unlikely to be caused by data mining. Second, the explanations for the anomalies (proposed in the earlier studies) are volatility and jump risk compensation and information trading. Although these risks may materialize at some points, their premiums tend to be structural components of the economic system. This may also be argued for the presence of private information. If some investors will possess private information in the future, the question becomes whether they would be willing to express their views in the option market (so that price discovery will take place in that market). Third, these anomalies may have been less well known compared with, for example, value and momentum strategies, but their documentation may promote a greater awareness. This may result in the entrance of new investors into these anomalies, which could decrease their profitability.

Bibliographic reference

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