

Determinants of Option Moneyness

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Abstract

In this paper, I investigate the determinants of option moneyness and explore the reasons of deviations from the put-call parity condition with respect to the option moneyness. The tests are conducted on the Nifty50 index options using a dataset from the year 2009 to 2014. The results indicate that least arbitrage opportunities are available while trading the At-the-Money (ATM) options; and, it increases as option moneyness moves away from the ATM options towards the Out-of-the-Money (OTM) or In-the-Money (ITM) options. The analysis of arbitrage opportunities in the options prices using the implied volatility spread indicates that the put options are costlier than the respective call options constructed using the same strike price and expiry date options. Furthermore, the impact of volatility, volume and open interest on the different levels of option moneyness as preferred by the investors has been . The regression analysis confirm that with an increase in change in volatility, the option moneyness preferred by the investors inclines towards the OTM options.

Introduction

OPTION MONEYNESNESS IS defined as the likelihood that an option will expire in the money, with respect to the equivalent martingale measure (Barth, Kraft, and Kraft, 1977). Moneyness measures an options' strike price with respect to its underlying assets' current price (or future price); thereby, describing the intrinsic value of an option at the current state of time (Chang, 2011). And in its simplest form, it can be measured as the ratio between the spot price (future price) and strike price (Etling & Miller, 2000). In essence, it provides information about the profitability of an option to the investors, if the option is exercised right away. A gain would signify that the option is ITM, while a loss would signify that the option is OTM, and if the strike price of the option is equal to its current price it is termed as ATM. Bates (1991) shows that around the time of the 1987 market crash, the prices of OTM and ITM options increased further more compared to the ATM options having the same expiry date. This phenomenon is termed as volatility smile;

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arbitrage opportunities are least in trading them. The analysis using the implied volatilities also confirm these findings; it shows that the variation in implied volatilities of options increases as we move away from ATM options. This variation is more for the analysis conducted using the near-month expiry options, compared to the one conducted using the next-month and far-month expiry options. Subsequently, a market efficiency test using the implied volatility spread, shows that the put options are costlier than the respective call options constructed using the same strike price and expiry date options; implying that the Indian options market are not efficient.

In the second part, I examined the impact of volatility, volume and open interest on the option moneyness preferred by the options investors. I performed the analysis using the daily data on the options written on the Nifty50 index as underlying asset, with the option moneyness as the dependent variable. The results of the initial summary statistics show that investors in general prefer to trade the OTM (call and put) options. The results of the regression analysis conducted using the near-month options are conclusive that the one-day lagged option moneyness positively influences the current day option moneyness. It implies that if the option moneyness preferred by investors on the previous day is towards the OTM options, then the option moneyness preferred will be towards OTM options on the current day as well. The moneyness of (call and put) options preferred by the investors inclines in the direction towards the OTM options when the volatility of the underlying Nifty50 index returns increases. Similar results are also observed with respect to change in the VIXIndia levels. However, the option moneyness preferred by the investors inclines in the direction towards ITM options when the volume (liquidity in the market) increases. Also, when the open interest increases, the option moneyness preferred by the investors inclines towards the ITM options. The findings of this study proposes that the information from the options and stock market influences the investors' preference to choose different option moneyness levels for investing. However, a question that needs further inspection is; whether the investors having future price information (private) about the market movements, actually trade in certain level of option moneyness, or they just randomly choose any option moneyness.

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