Pricing Efficiency of S&P CNX Nifty Index Options: A Study in Indian Securities Market

by

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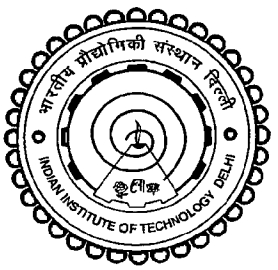

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CERTIFICATE

The thesis titled, **"Pricing Efficiency of S&P CNX Nifty Index Options: A Study in Indian Securities Market"**, being submitted by Mr. Alok Dixit to the Indian Institute of Technology, Delhi, for the award of the degree of Doctor of Philosophy (Ph.D.) is a record of bonafide research work carried out by him. He has worked under our guidance and supervision, and has fulfilled all the requirements for the submission of this thesis, which has attained the standard required for a Ph.D. degree of this institute. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.

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ABSTRACT

The options are the contracts which serve as a tool for risk hedging and price discovery. Therefore, they lead to better allocation of capital. The efficiency of an options market, i.e., the correctness of option prices indicates that it is working well at its well identified functions (Ackert and Tian, 2000). In view of this, the efficiency of options market has been of equal interest to the academics as well as practitioners and a number of studies have been carried out across the globe in different markets.

Index derivatives (e.g., index options and index futures) become a natural choice to the fund managers as most of the equity funds are created based on the practice called 'indexing' where the portfolio is benchmarked to the leading index of the economy. Amongst all index derivatives, index options play an important role in the economy as they provide a better hedging mechanism to the institutional investors (e.g., mutual fund organisations) compared to that of index futures, especially in the times of global uncertainty when the markets experience periods of high volatility. These contracts, unlike futures, allow fund managers to take advantage of favourable movements in the market along with the protection against the unfavourable movements.

Besides, these contracts extend an opportunity to the Portfolio Management Services (PMS) to provide structured financial products tailored as per the risk appetite of their clients. In sum, these financial instruments help financial institutions to provide stable earnings tailored to the risk appetite of their clients and, therefore, facilitate in mobilisation of funds from the domestic as well as foreign investors.

In view of the perceived relationship of the advantages of such financial innovations with the state of market efficiency and the nascent stage of derivatives market in India, it is desired that a comprehensive study be carried out to examine the pricing efficiency of the index options market. In response to this and lack of adequate literature on the subject in the context of Indian options market, the present study attempts to assess the efficiency of the S&P CNX Nifty index options, the options which are traded on the National Stock Exchange (NSE). The study has used secondary as well as primary data to analyse the state of index options in Indian options market. The secondary data analysis has been carried out using a comprehensive approach which includes 'model-free' as well as 'model-based' approaches to assessing options market efficiency. The 'model-free' approaches were tested using spot values as well as futures prices of the underlying asset in order to understand the role of futures market in restoring options market efficiency. Besides, a survey amongst the trading member organizations based at National Capital Region (NCR) and Mumbai has also been conducted for collecting primary data to corroborate the findings from the secondary data analysis.

The notable finding of the research is that put options market is more inefficient compared to call options market. It has been noted that put options have been overpriced in relation to call options as well as when analysed individually. The short-selling constraint in Indian securities market during the period under reference could be designated as the major reason for such a pattern of options mispricing. It is so because in the case of overpricing of puts, the correct arbitrage strategies require that a short position in the underlying asset be taken which was not allowed in the Indian market. However, it is generally argued that futures market can be used in case short-selling is banned in the market. In this regard, the study reveals that the futures

market could identify only some of the mispricing signals as the futures themselves have been under-priced in the absence of short-selling facility in the market as the correction of under-pricing of futures requires the possibility of short-selling. In nutshell, the revealed state of options pricing in the derivatives market can be attributed to the short selling constraints, dearth of liquidity and lack of proper understanding of the market amongst market participants/ investors.

Based on the findings of the research, the following recommendations have been made: (i) The short-selling should be allowed for a longer period of time from the existing time period of thirty days which has already been implemented by SEBI, recently, in November, 2008. (ii) The concerned exchanges should introduce market-makers to facilitate liquidity in the market. In addition, a more effective enforcement of risk containment measures (margin requirements on combined portfolio rather than individual transactions) is needed at dealer-client level as it would reduce the cost to enter the market. (iii) It would be beneficial to launch futures and options (in order to facilitate trading) on the recently introduced VIX, the volatility index that indicates markets' expectation of volatility in the near term and (iv) The major recommendation from the primary data is that a separate educational body should be put in place for educating investors more on derivatives.

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