THREE ESSAYS ON MODEL-FREE IMPLIED VOLATILITY AND VOLATILITY RISK PREMIUM

A THESIS
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Abstract

This dissertation presents three essays on model-free implied volatility and volatility risk premium.

The first essay investigates whether behavioural theory is a superior explanation for short term return-volatility relationship than traditional leverage and volatility feedback hypotheses. Using VAR and quantile regression frameworks, the study shows that behavioural theory explains the relationship better than the leverage and feedback hypotheses. The study supports that behavioural biases (representative, affect, extrapolation heuristics, etc.) exist among market participants, and these biases cause India Volatility Index (India VIX) to be an efficient hedge for extreme negative market movements.

The second essay investigates whether informed volatility trading in index options market is informative about volatility risk premium. Volatility demand information is constructed from the option order flow. The study finds that volatility demand information is informative about the future volatility risk premium. This finding is robust for both ex-ante and ex-post measure of volatility risk premium and after controlling for different variables. The study also finds volatility demand impacts the option prices positively. Consistent with the standard information trading models, findings support the idea of "volatility markup" process where liquidity suppliers adjust option prices such that implied volatility exceeds the realized volatility.

The third essay examines the existence of commonality in volatility risk premium of National Stock Exchange of India, an open electronic order book market. The study includes market and stock specific characteristics that may influence the commonality relationship. The key finding of the study is that it produces empirical evidence of commonality in volatility risk

premium. The commonality relationship is robust and significant even in the presence of market and stock specific factors.

Keywords: Model-free implied volatility, Volatility risk premium, Volatility demand, Realized volatility, Commonality

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