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Noise trading and stock market volatility

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Abstract

We investigate the relative effects of fundamental and noise trading on the formation of conditional volatility. We find significant positive (negative) effects of investor sentiments on stock returns (volatilities) for both individual and institutional investors. There are greater positive effects of rational sentiments on stock returns than irrational sentiments. Conversely, there are significant (insignificant) negative effects of irrational (rational) sentiments on volatility. Also, we find asymmetric (symmetric) spillover effects of irrational (rational) bullish and bearish sentiments on the stock market. Evidence in favor of irrational sentiments is consistent with the view that investor error is a significant determinant of stock volatilities.

JEL classification: G12; G14

Keywords: Volatility; Investor sentiment

1. Introduction

Noise trader models in finance imply that subsets of investors often do not make investment decisions based on a company's fundamentals and are capable of affecting stock prices by way of unpredictable changes in their sentiments. Much previous research provides a theoretical framework describing the relevance of investor sentiments in asset pricing. Most notable for this paper is the research of DeLong, Shleifer, Summers, and Waldmann (DSSW) (1990). Their creation of the noise trader model lead to further studies which provide evidence in favor of strong co-

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movements between investor sentiment and the stock market returns recognizing the existence of *individual* investor sentiments, as well as *institutional* investor sentiments.

Previous research focuses on the mean of stock returns while less attention is given to the impact of sentiments on the formation of conditional volatility. Specifically, the existing tests focus primarily on first moment contemporaneous correlations between investor sentiments and stock returns. No analysis is done to investigate the manner in which noise trading by individual and institutional investors may affect expected return through its effect on the market's formation of risk. The question arises: to what extent do individual and institutional investor sentiments impact stock market volatilities? Moreover, if such relationships do exist, are the effects driven by *rational* risk factors or *noise*? Answers to these questions are important in order to better understand how noise trader risk is priced in the U.S. market.

In this study, we investigate the relative effects of fundamental and noise trading on the formation of conditional volatility as suggested by DSSW (1990). Specifically, we make the following contribution to the extant literature: first, unlike previous studies which examine the relationship between sentiments and the mean of stock returns, we test the impact of individual and institutional investor sentiments on the stock market volatility; second, unlike previous studies which treat sentiments as fully *irrational* exuberance, we focus on both the *rational* and *noise* (*irrational*) components of investor sentiments and explore their relative effects on the volatility of stock returns; third, we investigate asymmetrical behavior of investor sentiments and stock volatility by differentiating between bullish and bearish sentiments.

We estimate a set of multivariate EGARCH models and find significant positive (negative) effects of investor sentiments on stock market returns (volatilities) for both individual and institutional investors. Unlike previous studies which conjecture investor sentiments as fully irrational, we find that the individual and institutional investor sentiments are driven by both rational and irrational factors. We find that rational sentiments have greater positive effects on stock returns than the irrational sentiments for both classes of investors. In the case of volatility we find significant negative effect of only irrational sentiments. Consistent with the behavioral theories, we find greater effect of irrational bullish sentiments than irrational bearish sentiments on stock market for both individuals and institutions. However, in the case of rational sentiments, we do not find the existence of such asymmetric effects.

This remainder of this paper is organized as follows. Section 2 presents the model while Section 3 presents the data. In Section 4, we provide estimation results and Section 5 concludes.

2. Model

The impact of noise trading as suggested by DSSW (1990) is due to the interaction of four effects of investor sentiments on stock returns and volatility. The first effect is due to the trading by bullish or bearish investors which takes the price away from the fundamental value. The second effect is the result of the adjustment in the market risk due to the changes in noise traders' demand of stocks based on their sentiments. Consequently, in the case of bullish sentiments, when the first effect is more than the second effect, the mean return is higher and vice versa. On the other hand, in the case of bearish sentiments, the mean return is always lower while both the effects build up. Specifically, these two effects capture the short-run effect of noise trading on excess returns due to the contemporaneous changes in investor sentiments.

The third effect captures the fluctuations in stock prices due to the variations of noise traders' misperceptions about the risk. When a majority of noise traders are more bullish (bearish) than the average, they bid up (down) the stock price. Consequently, the more numerous the noise traders are