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Risk-neutral skewness and market returns: The role of institutional investor sentiment in the futures market

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ABSTRACT

This paper investigates the effect of index risk-neutral skewness on subsequent market returns and explores whether this effect will vary with various types of institutional investor sentiment in the futures market. Using index futures returns as the proxy of market returns, the empirical results show that the index risk-neutral skewness has a significantly negative effect on subsequent index futures returns. Moreover, the effect of institutional investor sentiment on subsequent index futures returns varies with various types of institutional investor sentiment. Finally, the effect of index risk-neutral skewness on subsequent index futures returns relies on various types of institutional investor sentiment.

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1. Introduction

This paper investigates the effect of index risk-neutral skewness on subsequent market returns and assesses whether this effect depends on various types of institutional investor sentiment in the futures market. A large volume of previous research has extensively addressed on the crucial concern of how a security's co-skewness influences expected stock returns (e.g., Harvey & Siddique, 2000; Dittmar, 2002). Furthermore, a few studies have examined the relationship between the co-skewness and futures returns (see Christie-David & Chaudhry, 2001). Although the effect of risk-neutral skewness on

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subsequent returns has recently received considerable attention in the literature (see Conrad, Dittmar, & Ghysels, 2013; Chang, Christoffersen, & Jacobs, 2013), the empirical findings remain controversial[1]. Thus, this paper attempts to fill this gap[2].

Previous studies have proposed two possible explanations, the pricing correction hypothesis and the downside risk hypothesis, to interpret the impact of a security's skewness on subsequent returns. The pricing correction hypothesis suggests that a security's skewness is negatively related to subsequent returns (see Brunnermeier, Gollier, & Parker, 2007; Barberis & Huang, 2008; Conrad et al., 2013). Consistent with the pricing correction hypothesis indicated by Brunnermeier et al. (2007) and Barberis and Huang (2008), Conrad et al. (2013) find that the firm's risk-neural skewness has a substantial negative effect on subsequent stock returns. The downside risk hypothesis indicates that a security's skewness is positively related to subsequent returns (see Bates, 2000; Pan, 2002; Doran, Peterson, & Tarrant, 2007; Chang et al., 2013). Consistent with the downside risk hypothesis suggested by Bates (2000), Pan (2002), and Doran et al. (2007), Chang et al. (2013) present that the risk-neutral skewness of index returns has a positive, albeit insignificant, effect on subsequent market returns. Thus, the effect of risk-neutral skewness on asset returns is mixed and is an empirical concern.

Following Conrad et al. (2013) and Chang et al. (2013), this paper uses the index risk-neutral skewness, the model-free methodology suggested by Bakshi, Kapadia, and Madan (2003), to measure index skewness. According to Conrad et al. (2013), this paper argues that if the index option and index prices reflect the same information, then it is possible to use the index option market data to extract estimates of the skewness of the index (risk-neutral) probability density function. As a result, following the pricing correction hypothesis or the downside risk hypothesis, this paper hypothesizes that the index risk-neutral skewness has a significant effect on subsequent market returns.

In addition, the relationship between a security's skewness and subsequent returns might rely on investor sentiment. Brunnermeier et al. (2007), Barberis and Huang (2008), and Chang et al. (2013) indicate that a security's skewness is driven by investor demand for a security. Furthermore, Baker and Wurgler (2006) and Frijns, Koellen, and Lehnert (2008) suggest that the demand for a security can be affected by investor sentiment[3]. Therefore, the impact of investor demand for a security on skewness might be correlated with investor sentiment. Taken together, if the demand for a security's skewness is correlated with investor sentiment (Brunnermeier et al., 2007; Barberis & Huang, 2008; Chang et al., 2013; Baker & Wurgler, 2006; Frijns et al., 2008), and a security's skewness is associated with subsequent returns (Conrad et al., 2013; Chang et al., 2013), this paper conjectures that the impact of skewness on subsequent asset returns might tend to be conditional on the information of investor sentiment. However, no previous research has examined this topic. Thus, the current study aims to fill this void.

Academic research provides considerable evidence that investor sentiment is associated with asset returns. Numerous studies have provided evidence that investor sentiment of the stock market has a significantly negative effect on subsequent stock returns (Baker & Wurgler, 2006; Chung, Hung, & Yeh, 2012; Baker, Wurgler, & Yuan, 2012). On the other hand, the impact of investor sentiment in the futures market on subsequent market returns has attracted significant attention in the literature (see Wang, 2001; Brown & Cliff, 2004). Using data from the Commodity Futures Trading Commission (CFTC), Wang (2001) and Brown and Cliff (2004) use the trading activity of the futures market to construct institutional investor sentiment, and then examine the impact of institutional investor sentiment of the futures market on subsequent market returns[4]. Following Wang (2001), Brown and Cliff (2004), and Han (2008), this study also uses the trading activity of institutional investors in the futures market

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[1] Empirical studies testing the ability of skewness (or related measures) to predict stock returns have produced mixed results (see Bali & Murray, 2013).

[2] Previous research examines the cross-sectional and time-series effect of skewness on market returns. This study uses data from the Taiwan Futures Exchange (TAIFEX), in which there are both stock options and stock index options. However, the stock options are illiquid. Thus, due to data limitations, this paper focuses on studying time-series effect.

[3] As suggested by Baker and Wurgler (2006), the definition of a sentimental demand shock indicates that sentiment drives the relative demand for speculative investment.

[4] Previous studies have used the investor sentiment of a futures market as a proxy of institutional investor sentiment (e.g., Wang, 2001; Brown & Cliff, 2004; Han, 2008). Wang (2001) utilizes the trading activities of commercial traders and noncommercial traders obtained from the CFTC as the proxy of the trading behavior for large hedgers and larger speculators. Brown and

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