

Investor Sentiment in Stocks and Futures Markets

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Abstract: As nations implement interest rate hikes and the economy heads towards a downward trajectory, investor sentiment undergoes a significant transformation. While extensive research has explored how investor sentiment influences stock markets, there is limited investigation into its effects on futures markets. This study aims to delve into various methodologies used to examine investor sentiment, including existed indexes, news analysis, and machine learning techniques. The study will evaluate how investor sentiment influences futures market and explore the connection between futures market and stock market. It acknowledges that there are both similarities and differences in studying investor sentiment in the stock and futures markets and suggests that futures market may play a role in affecting stock market prices. By conducting a thorough review of existing literature, the objective is to enhance our understanding of price dynamics in both the futures and stock markets within the context of the current global economic downturn.

Keywords: investor sentiment, futures markets, downturn

1. Introduction

In the stock market, buying high and selling cheap is a popular kind of arbitrage. However, because the purchase lows are not low enough, most plunges frequently end in losses. Investor sentiment (IS) has regularly been shown via extensive studies to be a reliable signal for identifying the market bottom. IS has changed significantly as the world economy enters a period of weakness. By analysing how investor sentiment affects the market, surplus gains may be realised.

De Long et al. looked at the impact of IS on price changes in markets, which are influenced by both irrational noisy traders and false stochastic beliefs [1]. The research conducted by Bijl et al. demonstrated that increased Google search volumes for a stock were associated with negative returns [2]. This finding highlights the significant influence of sentiment on market outcomes. IS might serve as a contrary indicator in stock markets, and its measurement through various proxies has become a popular topic in finance research.

IS seems to play different roles in different markets. IS might serve as a contrary indicator in stock markets, and its measurement through various proxies has become a popular topic in finance research. In futures markets, investor sentiment might reflect a decreasing trend effectively, according to Chen et al., unfavorable news-related downward shocks on the INE crude oil futures market resulted in higher volatilities than similar-sized upward shocks [3]. Nevertheless, sentiment analysis can provide valuable insights into the behavior of traders in both markets and improve predictability for volatility. Trading decisions and risk management can both benefit from an understanding of how IS plays a

part in each market. This paper has explored some of the academic evidence surrounding IS in both stock and futures markets and suggests that sentiment analysis has practical implications for both traders and policymakers.

2. Define Investor Sentiment

The literature on finance lacks a clear definition of sentiment, as pointed out by Zhang and Dumas et al. emphasized the increasing interest in this subject, driven by the excessive volatility observed in global stock markets and the ongoing challenge of linking stock price fluctuations to fundamental factors [4,5]. Consequently, research in this area has taken various approaches to comprehending how sentiment affects stock market. One of the most crucial methods for examining IS is data analysis. Joseph et al. found that high volumes of Google searches were associated with increased stock returns during the initial period by analyzing data, but after that, increasing volumes of searches might be associated with decreasing stock returns [6]. The bulk of empirical investigations, however, have concentrated on developing proxies to measure sentiment rather than focusing on precisely defined investor sentiment [7].

Zhang defined investor sentiment which reflects the beliefs of individuals involved in the market regarding future cash flows compared to the actual fundamental value of the asset in question [4]. Consequently, investor sentiment refers to erroneous convictions maintained by investors, which can lead to incorrect investment decisions. The idea that investor sentiment acts as a contrarian indication in stock markets is widely acknowledged. This essay will examine some scholarly evidence in the part that follows to support this claim.

3. Approach of Measuring Investor Sentiment

Currently, there is no universally accepted approach for measuring IS. Broadly speaking, three methods are commonly used to gauge IS: index measurement, news measurement, and machine learning measurement.

3.1. Existed Index in Investor Sentiment

Some research was based on existing indexes to analyze IS. A VIX is used as a sentiment index by Simon and Wiggins, and Giot, who all report a significant negative contemporaneous sentiment-return association [8,9]. VIX, the Chicago Board Options Stock Market Volatility Index, is an indicator of volatility for S&P 500 options.

3.2. News in Investor Sentiment

News measurement involves collecting various sources of news, such as consumer confidence indicators and actual trader positions, to gauge the IS. Several studies have employed different approaches within this method. News measurement involves collecting various sources of news. Several studies have employed different approaches within this method. Daily internet search traffic is used by Da, Engelberg, and Gao to create a FEARSFootnote3 index that represents IS at the market level [10]. Renault developed a vocabulary of phrases used by online investors to communicate their thoughts and feelings regarding the optimistic or bearish character of stock market, utilising a big collection of conversations from the microblogging platform Stock Twits [11]. Fang et al. make use of Baidu Index search volume statistics to forecast the volatility, which is returns of China's stock market by creating a GARCH model [12]. Liang et al. studied the prediction potential of sentiment indices derived from new media and conventional media in forecasting the realized volatility (RV) of

Index [13]. The study discovered that IS based on new media had a substantial influence on the RV of the index, but sentiment based on conventional newspapers had no impact.

Besides analyzing news, some research also uses alternative messages to measure investor sentiment. The Investors' Intelligence Sentiment Survey is used by Lee, Jiang, and Indro as an indicator [14]. This research is comparable to the UBS/Gallup poll, which Qiu and Welch suggest may be a good proxy for confidence of consumer [15]. Schmeling uses the consumer confidence proxy to analyse the impact on stock market returns across 18 industrialized nations [16]. and that these metrics serve as trustworthy contrarian measurements of market performance. Based on real trading positions as shown by a COT which is the Commitment of Traders report, Wang creates a sentiment index [17].

3.3. Machine Learning in Investor Sentiment

Machine learning techniques can also be applied to analyze IS. For instance, Jing et al. employ the LSTM Neural Network, which is Long Short-Term Memory Neural Network for stock prediction and the Convolutional Neural Network model for analyzing IS [18]. Many machine learning approaches measure IS by gathering keywords from financial news, financial messages, and comments using different machine learning models. This also involves collecting and analyzing online news data.

In conclusion, there are several methods commonly used to measure IS. Firstly, existing indices such as the VIX have been utilized as proxies for sentiment in various studies. Secondly, news measurement involves collecting and analyzing various sources of news. This method has been employed in studies that utilize internet search volume, microblogging platforms, and Statistics of the amount of searches from platforms to forecast volatility or analyze IS. Additionally, alternative messages like IS surveys, consumer confidence proxies, and trader positions have also been used to measure sentiment. Lastly, machine learning techniques, such as Convolutional Neural Networks and LSTM Neural Networks, can be applied to analyze IS by extracting keywords from financial news, messages, and comments. The most of methods involve the collection and analysis of online news data.

4. The Role in Futures Market

Numerous academics have conducted extensive studies on the effect of IS on futures markets. It is indicated that different kinds of futures contracts can exhibit varying degrees of sensitivity to IS.

4.1. Agricultural Futures Markets

Large IS has an impact on agricultural futures markets. In a study of six agricultural futures markets, by kind of trader, Wang examined the position-based sentiment in actual trading [19]. According to the study, large speculators' sentiment predicts price growth, but large hedgers' emotion has the opposite effect. The sentiment of small traders is useless for predicting. Additionally, a number of sentiment-based timing tactics were looked at, and it was shown that the strongest timing signal came from combining extreme large trader sentiments. This has practical implications for futures traders because it suggests that consistently investing in these agricultural futures markets when large speculators prefer buying and large hedgers prefer selling them which can result in significant profits when huge speculators are excessively optimistic and large hedgers are highly pessimistic. Besides that, Akyildirim et al. reveal that the relationship between agricultural returns and sentiments exhibits temporal variability by analyzing news-based IS [20]. Notably, they observed a substantial increase in the connectedness during the COVID-19 pandemic. The author suggests that the accelerated dissemination of news due to the development of the internet, coupled with the rapid spread of information during the COVID-19 pandemic, could potentially account for this phenomenon.

4.2. Precious Metals Futures Markets

Precious metals futures were considered a sort of Safe-haven assets in financial markets which means that in terms of low sentiment, precious metals might become valuable. Smales and Lucey investigate changes in liquidity for precious metals [21]. They investigate liquidity provision prior to monetary policy statements and its connection to present sentiment by analysing high-frequency data. They compared the variations in market liquidity for gold and silver using three different instruments: futures, exchange-traded funds, and physical or bullion. The study's findings show that the least liquid instruments and markets have the largest liquidity reactions in terms of speed and size. When investor confidence is low, liquidity is also more susceptible to being affected by monetary policy and market conditions, which is consistent with the desire for "safe-haven" assets at these times.

4.3. Energy Futures Markets

According to Wang et al., there is a considerable correlation between IS and fluctuations in crude oil futures prices after severe shocks [22]. They highlight the fragile and vulnerable nature of the market, where extreme shocks exert a stronger influence on IS compared to normal shocks. This conclusion underlines the need of taking sentiment's severe impact into account when formulating policy actions targeted at lowering market risk for crude oil futures. The analysis also shows that the impact of IS on futures of crude oil varies over time, with the most impact shown after severe shocks.

At the same time, Chen et al.'s study investigates the influence of a sentiment index composed of search-based and market-based sentiment proxies on the Chinese energy futures market, which includes RSI, open interest, PSY, the Baidu Index, volume and a revolutionary IS that takes into account retail investor attention [3]. The results demonstrate that IS, particularly in times of rising volatility, has a bigger influence on energy futures markets.

In general, studies on IS in futures markets offer insightful information on the dynamics and effects of sentiment across numerous futures contracts, assisting traders, decision-makers, and researchers in comprehending and managing market risks.

5. Similarities and Differences in the Study of IS in the Stocks and Futures Markets

5.1. Similarities

There are some similarities in the stocks and futures markets: At first, the study of IS in both markets often relies on similar tools and techniques, such as sentiment surveys, social media analysis, and sentiment indicators. Secondly, in both markets, IS can be driven by various factors, including economic news, company announcements, geopolitical events, and investor behavior. IS can be considered as a contrary indicator. Thirdly, Renault demonstrated that initial changes in IS predict final returns of S&P 500 index ETFs [11]; Chen et al. found the novel IS can improve predictability for volatility in futures market [3].

5.2. Difference

There are some differences in stock and futures markets: At first, the information available to investors in stock and futures markets can be different. In the stock market, investors have access to company financials, news, and analyst reports, while in the futures market, investors rely on macroeconomic indicators and supply and demand factors for the underlying asset.

Secondly, the impact of IS varies in the stock and futures markets. Empirical research has shown a robust correlation between IS and stock returns in line with theoretical expectations, as demonstrated by Smales [23]. Additionally, Renault found that changes in IS during the first 30

minutes of trading can predict final returns, even after accounting for previous market returns [11]. However, in futures markets, IS is more akin to an indicator for selling at top. Chen et al. discovered that adverse shocks from adverse information on INE crude oil futures led to greater volatility than positive shocks of equal magnitude [3]. This might be due to the fact that market hotspots differ at different stages, with stock market index reflecting companies across various sectors, while futures index relate solely to a single commodity. It's possible that similar situations may arise when studying individual sector stock indices.

To summarize, there are both similarities and differences in the study of IS in the stock and futures markets. Both markets rely on similar tools and techniques for analyzing sentiment, and sentiment can be influenced by various factors in both markets. However, there are differences in the types of information available to investors and the impact of IS. In stock market, investors have access to company financials, news, and analyst reports, while in the futures market, investors rely on macroeconomic indicators and supply and demand factors for the underlying asset. Additionally, the impact of IS on returns differs between the two markets, with sentiment being a more robust predictor of stock returns than futures returns. These differences may be due to the fact that stock market indices reflect companies across various sectors, while futures indices relate solely to a single commodity, and may have implications for how investors approach sentiment analysis in each market.

5.3. The Link Between Stocks and Futures Markets

There are scholars who actively investigate the correlation between stock market and futures market. Extensive research has provided evidence of a definite connection between these two markets.

Song et al. conducted a study on the market for fossil fuels, the investor view of renewable energy, and the stock market for renewable energy [24]. According to their research, the market of crude oil had a stronger effect on the stock market for renewable energy than the markets for natural gas and coal. This research led to the construction of a comprehensive system that incorporated these elements. The author suggested that one significant factor contributing to this phenomenon was coal's monopoly on the energy market.

In their research, Hou and Li investigate the transmission of returns in the Chinese stock index spot and futures markets during the stock market crash [25]. This period was characterized by stringent regulations imposed by the Chinese regulatory authority, which greatly limited trade activities in futures market. The study sheds light on how the local futures market conveys prices to the underlying stock market during the period of stringent regulations. The findings reveal that even under an exceptionally restrictive trading environment, the Chinese stock index futures market continues to play a pivotal part in maintaining information dissemination, similar to its performance during normal market conditions [26].

In conclusion, numerous scholars have actively investigated the correlation between stock market and futures market, and their extensive research has provided compelling evidence of a definite connection between these two markets.

6. Conclusion

In conclusion, the study of IS is an important aspect of both stock and futures markets, and it involves similar tools and techniques. However, there are differences in the types of information available to investors and the impact of IS on returns in each market. At the same time, the active investigation by numerous scholars has provided compelling evidence supporting the existence of a definite connection between the stock market and futures market. Nonetheless, sentiment analysis can provide useful insights into the behavior of traders in both markets and improve predictability for volatility. Understanding the role of IS in each market can help traders make informed decisions and manage

risk more effectively. Overall, the findings suggest that IS analysis has practical implications for both traders and policymakers in both markets.

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