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Profitability of return and sentiment-based investment strategies in US futures markets

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ABSTRACT

Our study adds to the literature by providing initial evidence on the interaction between short-horizon return predictability and investors' sentiment by traders' types on US commodity futures market. We find that the short-term contrarian profit is more associated with an increase rather than a decrease in hedgers' sentiment. However, the interaction between lagged return and past change in speculators' sentiment illustrates that the short-term contrarian profit is more associated with a decrease rather than an increase in sentiment. Based on behavioral finance theories, we conclude that hedgers behave like irrational traders while speculators behave like rational ones. Using Chou et al. (2007) decomposition, our results confirm the obtained relations between change in trader's sentiment and the overreaction. By expanding this decomposition, we find that the winners' portfolio tends to more overreact with futures specific information. Also, the cross-autocorrelation between winners and losers and between losers and winners can represent another source of contrarian profits.

1. Introduction

Over the past decade, both academics and practitioners have long documented that past prices contain useful information about future market movements in equity markets. Therefore, they found evidence on the short-term contrarian strategies. Lehmann (1990) and Lo and MacKinlay (1990) present the first works in this area that document the presence of short term contrarian in equity markets that lead to abnormal return in these markets. After these two works, a growing body of literature established in different equity markets found the presence of short-term contrarian (Chopra et al., 1992; Bowman and Iverson, 1998; Kang et al., 2002; Chou et al., 2007; Syriopoulos and Parikakis, 2008; Chae and Eom, 2009; Baker and Stein, 2004; Boubaker et al., 2014). Most of the theoretical and empirical papers on short-term reversal have focused on stock markets. However, the performance of short-term contrarian has been applied in commodities futures markets to a lesser degree. Focusing on the current literature, studies on short-term profitability in commodity futures markets were initiated by works of Lin et al. (1999). In this paper, Lin et al. (1999) uses the Lo and MacKinlay (1990) methodology to test the presence of short-term profit from buying past losers and selling past winners' strategies in commodities markets. More recently, Wang and Yu (2004) have used a sample of 24 commodities futures contracts actively traded on US market and investigated the profitability of contrarian strategies at weekly intervals. According to Bellini and Torluccio (2013) and based on the

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existent literature review, the number of papers focusing on short-term contrarian profit is very limited on commodities futures markets. The recent financial literature recognized that investors' sentiment provides valuable information about future market movements. The first study that focuses on the interaction between sentiment and trading strategy based on winners and losers' stocks was conducted by Li and Yeh (2011) and established in China A shares stock market. More recently, Antoniou et al. (2013) used all common stocks listed in the New York and American Stock Exchanges and found that the momentum profit is higher during the periods of high investor's sentiment compared to low sentiment periods.

Over the last years, the lead–lag relationship between investor's sentiment and returns is principally tested in commodities futures markets. For instance, Sanders et al. (2003) examine this relation between sentiment and returns and they found that when the sentiment reaches its extreme level, the noise trader's sentiments represent a useful predictor for futures returns. More recently, Chen and Chang (2005) found that sentiments measures predict significantly the returns on S&P 500 futures. Earlier, in the first of series of studies between 2001 and 2004, Wang (2001) has focused on the usefulness of sentiment by trader's types for forecasting future prices in six major agricultural futures markets. The result states that speculators and hedgers' sentiment measures are both valuable timing indicators. Also, speculator's sentiment predicts price continuations while large hedger's sentiment forecasts price reversals. Wang (2003a) examines the predictive power of investor's sentiment index based on futures positions by traders' type for forecasting future market movements in the S&P 500 index futures market. The obtained result confirms his 2001 study. Using data from five currency futures markets, Wang (2004) also shows that sentiment of large speculators is positively related to future returns, whereas the sentiment of large hedgers' traders is negatively related to currency futures returns.

To the best of our knowledge, the informational role of the interaction between past returns and past change in investors' sentiment by traders' type has never been tested in commodity market, even though a number of studies in recent literature recognized that investors' sentiment provides valuable information about future market movements in commodities markets. Therefore, to fill this gap, this paper adds three contributions to the empirical literature on commodity futures markets. First, we provide initial evidence on the interaction between short-horizon return predictability and change in investor's sentiment by traders' types in 24 US commodity futures market. Next, we focus on identifying the source of the profitability of return and sentiment-based investment strategies using Chou et al. (2007) decomposition method. As far as we know, this model has never been applied in the commodity futures market. Finally, we further divide the decomposition of Chou et al. (2007) into winners' and losers' auto-correlations and cross-autocorrelations using Chae and Eom (2009) methodology. For this reason, we decompose this paper into three principal sections: in the next section, we will present the methodology, we detail the sample and present the data used to test the interaction between past returns and past change in investors' sentiment by traders' type, as well as, to detect the possible source of profit given by this strategy. The empirical implications are developed in section three. Finally, concluding remarks will be given accordingly.

2. Methodology and data

2.1. Data

2.1.1. Price data and futures returns

Our dataset include Tuesday settlement prices for 24 US commodity futures contracts, over the sample period obtained from *Datastream International* and *quandl website*. As in Wang (2004), when the Tuesday settlement prices are missing, the next day prices are used. We choose the frequency of time series based on the availability of speculators and hedgers positions in the CFTC Aggregated Commitment of Traders Report that are collected every Tuesday and made available to the public on the next Friday. The dataset spans January 01, 2000–December 31, 2012 and includes 13 agricultural commodities (cocoa, coffee C, corn, cotton no. 2, frozen concentrated orange juice, oats, rough rice, soybean meal, soybeans, sugar no. 11, Kansas wheat, length lumber and wheat), four metal commodities (copper, gold, platinum and silver), four energy commodities (gasoline,[1] heating oil no. 2, light sweet crude oil and natural gas), three livestock commodities (feeder cattle, lean hogs, live cattle).

As in Fuertes et al. (2010) futures returns are computed as the percentage change of the settlement prices. Driven by liquidity considerations and to obtain a representative futures return series we take into consideration the nearest and second-nearest contracts and we suppose that the investors hold contracts to the last day of the month prior to the delivery month. In the first day of the expiration month the position is rolled over to the second nearest contract, and then this contract held up to the last day of the month prior to the expiration month. The data in Table 1 show that during the period between January 2000 and December 2012 the annualized weekly return is positive for all commodities while over the 24 commodities only five produced significant returns. This result is very close to the reported results on Chevallier and Ielpo (2014). These authors attest that a positive return over the tested period is not a proof that commodity holders receive a risk premium for being long of such markets.

[1] The RBOB Gasoline contract is spliced with the Unleaded Gasoline contract for dates prior to December 2006.