Research in International Business and Finance 38 (2016) 45–55

Contents lists available at ScienceDirect

Research in International Business and Finance

journal homepage: www.elsevier.com/locate/ribaf

Full length article

Returns, volatility and investor sentiment: Evidence from European stock markets

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ARTICLE INFO

Article history:
Received 20 October 2015
Received in revised form 2 March 2016
Accepted 29 March 2016
Available online 6 April 2016

Keywords:
Behavioral finance
Investor sentiment
Portfolio management
Volatility
Returns predictability

ABSTRACT

In this study, we show that patterns in returns behave as if investors, influenced by their level of optimism, selected stocks according to their volatility. Our goal is to confirm the contribution of behavioral finance while showing that investor sentiment can be profitably used by practitioners. We incorporate volatility in the relationship between investor sentiment and future returns, this is the main originality of our approach. Our methodology consists in comparing returns, volatility and higher-order moments of portfolios managed with investor sentiment against those obtained either with passive (buy and hold) portfolio management or with a minimum variance portfolio. Portfolios managed with investor sentiment have better returns and involve less risk under certain conditions.

1. Introduction

According to the efficient market hypothesis (Fama 1965a, 1965b; Fama, 1970), all information is immediately integrated in stock prices and investors are expected to act rationally. Several stock market crashes that cannot really be explained by the news have raised questions about how investors really make their decisions. In addition, researchers such as Kahneman and Tversky showed that human decisions are based on very imperfect information processing. Behavioral finance is born from the desire to grant greater importance to the reality of investor behavior.

While the first studies in this new line of research have helped identify behavioral biases and anomalies related to stock prices, in order to be considered the dominant theory, behavioral finance must go beyond criticism of the efficient market hypothesis by providing tools and models. Prospect theory (Kahneman and Tversky 1979, 1992) and investor sentiment were the first steps in this direction. Investor sentiment can be defined as beliefs regarding future cash flows and investment risks that are not justified by the information available (Baker and Wurgler, 2007). In order to measure it, many indicators were created. Direct measurements, based on surveys, are usually distinguished from indirect measurements that use market data, often quotes. More recently, some researchers have used Internet search engine activity (e.g. Da et al., 2011). To our knowledge, regardless of the manner used to measure investor sentiment, no study has highlighted a link between market sentiment and future returns that is strong enough to be used as the main tool in portfolio management.

To highlight the ability of investor sentiment to help predict returns, our research puts volatility at the heart of the relationship between investor sentiment and future returns. This is its first originality. The second is an empirical approach, based on the analysis of stock portfolios returns and intended to highlight the interest of behavioral finance for practitioners.

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http://dx.doi.org/10.1016/j.ribaf.2016.03.007
0275-5319/

Our hypotheses is that when investors are optimistic they buy riskier assets, in other words the most volatile ones, and neglect the least risky and that, on the contrary, when they are pessimistic, they prefer stocks which have the smallest standard deviation. We suppose that these operations create a temporary difference between the price of the stocks concerned and their fundamental value and that an investor can take advantage in the reduction of this difference. To validate this hypothesis, we analyze the performance of portfolios by buying stocks previously neglected or, conversely, by selling short the stocks that investors were previously interested in. The results show that some of these portfolios perform better than the benchmark portfolio managed either with the buy and hold method or built with the same stocks and a minimum variance strategy. This performance is increased when purchases and short sales are combined in a single portfolio according to investor psychology.

The structure of this paper is as follows: in Section 2, we discuss the literature and selected research papers; Section 3 presents the hypotheses, Section 4 the data and the method. We devote Section 5 to discussing results.

2. Previous studies and selected papers

Numerous articles have examined the relationship between market sentiment and returns. More specifically, they have tried to assess the ability of sentiment indicators to forecast returns.

Solt and Statman (1988) and Clarke and Statman (1998) do not find a significant relationship between the Investors Intelligence index (II) and returns after four, twenty-six or fifty-two weeks on the Dow Jones Industrial Average or the SP 500. These studies were conducted based on observations after 1964, the beginning of the II historical data. Fisher and Statman (2003) highlight a significant relationship between individual investor sentiment measured with the AAII (American Association of Individual Investors) index and the one-month returns of blue chips from July 1987 to July 1998. They also show that the AAII and II indices are significantly correlated. This link must be analyzed with caution because they do not establish a significant relationship between confidential letter editors' sentiment (measured by the II index) and the one-month returns for large caps. They do not find a link between small cap returns and individual investor sentiment or confidential-letter publisher sentiment.

Brown and Cliff (2005) focus on the impact of market sentiment over the longer term. Using the II index, they show that market sentiment levels have an impact on one to three-year returns. Neal and Wheatley (1998) test three methods for indirectly measuring sentiment:

- Closed-end funds discount
- Net sales to total mutual funds asset ratio
- Sales to purchases small orders ratio

They highlight the existence of a link between the first two criteria and small caps returns. Then, after adding a control variable, the average price of small caps, only the ratio based on mutual fund sales has value in predicting returns. Brown and Cliff (2004) have highlighted the covariance between their composite sentiment index and market returns. However, this sentiment index cannot be used to anticipate returns, as observed in the inability to generate profits with a trading strategy based on it. Continuing with a more detailed analysis, Brown and Cliff find that the strongest link is between blue chips and institutional investor sentiment while it is generally considered that market sentiment affects mainly small caps because of noise traders' limited rationality. Yu and Yuan (2011) show that market sentiment has an impact on the mean-variance relation: during high-sentiment periods, the usual negative correlation between returns and volatility innovations is significantly weaker. According to Yu and Yuan, risk aversion is lower so prices are less sensitive to increased volatility. Ben-Rephael et al. (2012) use the volume of arbitrage between bond funds and stock funds to measure investor sentiment. They highlight a relationship between this indicator and the excess return of the stock market and the fact that 85% of the excess return are absorbed within 4 months. Using data provided by Google, Beer et al. (2013) construct a measure of pessimism. They show that it is negatively correlated with returns during the first 2 weeks and positively correlated during the following 3–4 weeks. This effect is stronger for small firms than for large caps. Results have been quite contradictory and are therefore difficult to summarize.

Bahloul and Bouri (2015) show that short-term contrarian profit on US commodity futures market is primarily associated with an increase in hedger sentiment and with a decrease in speculator sentiment. Boubaker et al. (2015) highlight short-term overreactions on the Egyptian stock market during exceptional events (terrorist attacks).

Finally, the link between investor sentiment and future returns seems partial and unstable. It varies considerably depending on markets, sentiment measures and time frames. This is why we want to propose another approach to study this relationship between investor sentiment and returns.

3. Hypothesis

According to the efficient market hypothesis (EMH), information is immediately and efficiently incorporated into stock price so there is no significant difference between the price and the fundamental value and no trading opportunity. Behavioral finance, which has mainly been developed since the 1987 crash, questions the assumption of investors' perfect rationality. The challenge for behavioral finance is to move beyond a critique of the EMH and propose tools that help operationalize the