

A Review of the Effects of Investor Sentiment on Financial Markets: Implications for Investors

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Theoretically investors are thought to be rational under EMH; however, in early papers irrational investors, named as noise traders, were not been paid much attention. Based upon the studies of De Long et al (1990) and Lee et al (2002), noise traders have influences on the price formation of assets and conditional volatility. Excess returns of stocks are also affected by investor sentiment. This study provides a review of the effects of investor sentiment on financial markets. There are three suggestions for investors while making investment decisions. First, investors should take a contrarian investment strategy to gain excess returns. Second, small capital stocks are more suitable for investors who can bear larger risk. Third, undervalued stocks should be chosen to gain higher returns.

Introduction

The efficient markets hypothesis (EMH) has dominated the field of finance for nearly thirty years. Fama (1970) defined the efficient market as a market in which security prices always fully reflect the available information. The EMH rests on three arguments (Shleifer, 2000). First, investors are assumed to be rational and value securities rationally all the time. Second, even if some investors trade irrationally, they would trade in a random way. Their trading strategies are not correlated with others and those trades are likely to cancel others out. In other words, the irrational trading decisions do not have influences on prices of securities. Finally, some investors do not trade randomly, but they probably make decisions in similar ways. Consequently, the prices of securities would be overpriced or underpriced. However, the deviation of prices would not last for a long time because arbitrageurs would trade against noise traders to make profits and finally arbitrageurs would drive prices of securities close to fundamental values.

Theoretically investors are considered rational under EMH. However, more and more significant evidences suggest that investors do not trade rationally and make smart decisions all the time. Sometimes they would buy or sell the same securities at roughly the same time because they imitate the judgments with other investors or listen to the market rumors. (Shiller, 1984). Sometimes investors overreact to the news of securities. J.M. Keynes (1997) observed that some insignificant investment information had excessive influences on the markets.

Moreover, there are many empirical findings challenging the theoretical statements of EMH. For example, based upon EMH, relevant news is a trigger of movements. However, the prominent market crash on October 17 of 1987 in U.S.A. obviously violates the

framework of EMH. Observers could not find any apparent news about the markets at that day. We called such phenomena against EMH as “financial anomalies” or “financial puzzles”. Thus financial markets are not expected to be efficient and investors are no longer expected to act rationally all the time. The irrational investment decisions are not some special cases, but they have influences on the formation of prices and are deserved to pay much more attention than before.

Inefficient Empirical Results in Financial Markets

Based upon the study of Kahneman and Riepe (1998), investors rely on some fixed rules and intuition when making financial decisions. Kahneman and Riepe (1998) propose some related cognitive biases and illusions in decision-making, such as overconfidence, optimism, and overreaction to chance events. Actually, many empirical findings suggest considerable evidences of those cognitive biases.

First of all, people would be overconfidence and extrapolate from their past experiences to predict what is likely to happen in the future. The study of De Bondt and Thaler (1985) shows the evidences of overconfidence for investors in investment decisions. De Bondt and Thaler (1985) compare the performances of two groups of companies, extreme losers and extreme winners, and find that the returns of extreme losers are higher than those of the extreme winners. The extreme losers are the companies that had poor performances in past periods. Investors are likely to predict the future earnings of those companies on the basis of past poor performances, thereby undervaluing the extreme losers. Consequently, the extreme losers become too cheaper, so bounce up and earn higher returns thereafter. Similarly, after a sequence of overvaluation, the extreme winners become too expensive and thus bounce down, thereby earning lower returns.

There are more similar empirical results fitting with the cognitive bias of overconfidence on financial markets. For example, Basu (1977) shows the price earning ratio (P/E) anomaly. With extremely low P/E ratios, stocks earn larger risk-adjusted returns than those with high P/E ratios. After a series of bad earnings the investors are excessively pessimistic about stocks, and then those stocks get lower P/E ratios. Once the future earnings turn out to be better, the prices of stocks with extremely low P/E ratios adjust much more than those of stocks with extremely high P/E ratios. In this case, investors also extrapolate past experiences into the future. Moreover, De Bondt and Thaler (1987), Fama and French (1992) and Lakonishok et al (1994) also find that portfolios of companies with high market to book ratios have earned much lower returns than those with low ratios. The high market to book ratio also reflects that investors are overconfident about the future profitability of companies with past good performance. Hence, the prices of good performance stocks go up and diverge away from the fundamental values. Thereafter, the stocks with high market to book ratios earn lower returns in the future due to their overstated values.

Dreman and Berry (1995) report that positive and negative earnings surprises have asymmetric effects on “best” and “worst” stocks. Their study implies that the impacts

of earnings surprise are in favor of worst stocks. According to past experiences, investors show cognitive biases on “best” and “worst” stocks in an asymmetric manner. For example, investors have expectations that “best” stocks in the future should be at least as profitable as in past time. If earnings of “best” stocks are higher than expectation, investors have no big shocks because “best” stocks are still the best. However, when earnings of “best” stocks are lower than expectations, investors would have huge shocks by the negative earnings surprises because “best” stocks are no more the best. In short, the negative surprises of “best” stocks have more effects on investors. Similarly, investors consider “worst” stocks bad, so positive surprises cause higher effects than negative surprises.

Second, optimism is another psychological bias and makes investors underestimate the probabilities of bad outcomes. Optimists tend to exaggerate their abilities to control over the unknown events. Both the tulip mania and Internet bubble are good examples of optimism. During the late 1990's investors are overoptimistic about prospects of Internet companies. Their optimistic beliefs make investors underestimate the risk of chasing the Internet companies as well as the probabilities of losing money. That is to say, the cognitive misperception urges investors to make irrational decisions. The prices of Internet stocks thus go up and up. Another survey made by Thaler (1999) also consists with the optimistic beliefs about Internet companies' performances. Based upon the investigation of professional investors, the intrinsic values of a portfolio with five Internet stocks (America Online, Amazon.com, eBay, Priceline.com, and Yahoo!) were only fifty percent of their market values.

In addition, the market does have huge volatile at one day when there is no apparent news about fundamental values of securities. For example, the Dow Jones Industrial Average fell by 22.6% on October 19 in 1987 without any special news. Also, Cutler et al (1991) had examined the top 50 one-day stock price movements in the United States after World War II and found no major announcements during most of those days. Still another example is that the events of inclusion into the Index usually cause the stock prices go up. Wurgler and Zhuravskaya (1999) state that inclusion into the Index between 1976 and 1996 actually makes average prices increase 3.5%. For instance, in December of 1998, the price of American Online rose 18% on the day of inclusion into the Index. For all these examples above, people overreact to chance events and violate the assumptions of EMH. Even though these examples do not fit with EMH, however, from the aspect of investor psychology, they provided alternative explanations about overreaction for such crowd behaviors.

Furthermore, there is another type of inefficiency in financial markets. Based on EMH, stale information makes no movement of stock prices. However, most of the time small capital stocks have earned higher returns than large capital stocks. Siegel (1998) found that between 1926 and 1996, the compound annual return on the largest decile of the NYSE stocks is 9.84%, and compared to 13.83% on the smallest decile. Fama and French (1992) also suggest that the size and return have negative relationships, so called the size effect. There is no evidence showing that small stocks are riskier than large

stocks. Besides, the sizes of companies are stale information, with no relation to fundamental values. Those higher returns earned by small stocks can possibly result from investor psychology.

Finally, Shefrin and Statman (1985) interpret another behavior in the stock markets, so called regret. Investors usually keep the stocks whose prices are below their costs, because they want to avoid having the feeling of making wrong decisions. Kahneman and Tversky (1979) made a lot of psychology experiments to analyze the process of decision-making. Those experiments show the evidences of loss aversion of investors. That is to say, investors sell stocks with positive returns and keep those with negative returns, so they are not on pains of loss and regret. The study of Odean (1998) also proves that investors are not reluctant to sell stocks that lose value.

In conclusion, there are so many empirical results against the EMH. However, those can be explained from the aspect of investor behaviors. In short, the irrational investment decisions cannot only been treated as some "anomalies". Actually the irrational investment decisions have influences on the price formation of stocks. Investor should pay much more attention on the aspect of investor psychology than before.

Influences of Investor Sentiment on Financial Markets

Because there are so many empirical studies providing the evidences of inefficiency of financial markets and irrationality of investors, the irrational behavior in the market cannot be simply treated as an anomaly. Generally speaking, most investors pay attentions to the possibility of the recent history generated by chance. In addition, investors usually pick stocks through their incomplete researches or through the rumors in markets. Most time investors may emphasize too much on the current earnings of rapid growth companies, predict the current earnings too far into the future, and thus overprice these glamorous companies. Such heuristics sometimes lead investors to make wrong decisions. In short, people based on heuristics rather than Bayesian rationality are called "noise traders". (Kyle, 1985 and Black, 1986)

In early papers, noise traders are not been paid much attention. Friedman (1953) and Fama (1965) state that the irrational noise traders would pull the prices of assets away from the fundamental value, but rational arbitrageurs would meet them in the market and trade against them. After the process of arbitrage, prices would be driven close to fundamental values. Friedman and Fama conclude that irrational trades could be ignored. Moreover, Friedman and Fama also argue that noise traders on average sell low, buy high, and lose lots of money. To sum up, noise traders cannot affect prices of stocks too much. Even if they can, the process will not last for long.

De Long et al (1990) propose a model to show that noise traders have influences on price formation of assets. They point out that the beliefs of noise traders would drive the prices further away from the fundamental values, so the deviations from the means of assets' prices become more extreme. The process above causes another source of risk in financial markets, named as "noise trader risk". Noise trader risk is assumed to

be market-wide and has influences on the price formation of stocks. In short, De Long et al interpret that irrational investors bear noise trader risks and have higher average returns than rational arbitragers.

Besides, the study of De Long et al (1990) also presents four effects of investor sentiment on price formation of risky assets. First, noise traders demand more risky assets when they are optimistic. They drive the prices of risky assets up, so they earn lower returns. This is called the "price pressure". That is to say, the price pressure makes prices of risky assets higher and noise traders' returns lower when noise traders are more bullish. Second, The more volatility of the noise traders' belief is, the more uncertainty of risky assets is. For the reason of uncertainty, arbitrageurs would hold less risky assets because of risk aversion and then earn lower returns. However, noise traders would buy or sell more risky assets to "create their own space". On the other word, when fewer arbitrageurs are in the markets, noise traders would drive prices much away from fundamental values. Then noise traders earn more returns because they take more noise trader risks. In a word, the larger "create-space effects " of noise traders are, the higher returns noise traders gain.

Third, when noise traders are more optimistic, they hold more risky assets and earn more returns for bearing much risk. That is called "hold more effect". In other words, when noise traders are more bullish, "hold more effect " makes them earn higher returns. Finally, noise traders usually buy risky assets at higher price and sell them at lower price. "Friedman effects" represent such effects of buy-high-and-sell-low effects for investors. The more "Friedman effects" are, the lower returns of noise traders earn.

Consequently, De Long et al (1990) conclude some important arguments about noise traders, there are as follows. To begin with, because uncertainty of noise traders' future opinions drives prices away from fundamental values, rational investors would limit their positions while betting against noise traders to reduce probabilities of losing money. In short, noise trader risk is created by noise traders and assumed to be market-wide. Second, noise traders bear risk that they create, so they earn higher returns than rational arbitragers. Finally, when noise traders exist, the prices of risky assets show excessively volatile.

Lee et al (2002) employ a generalized autoregressive conditional heteroscedasticity (GARCH) in-mean model (Bollerslev, 1986, 1987; Engle et al., 1987) to prove those four effects of investor sentiment on financial markets. Their results show that the conditional volatility and excess returns are affected by investor sentiment. Lee et al (2002) also infer that there are relationships between market volatility, excess returns, and investor sentiment.

The sentiment index used in the model of Lee et al (2002) is based on data provided by Investors' Intelligence of New Rochelle in New York. Every week the editor of Investors Intelligence investigates 135 investment advisory services and reads the newsletters to which these advisors write investors. If advisory services recommend investors to buy stocks or predict a bull market, the newsletters are rated as "bullish". If advisory services

inform investors to sell stocks or predict a bear market, the newsletters are labeled as “bearish”. Moreover, if investors are advised to hold off buying in a bull market or selling in a bear market, the newsletters are labeled as “correction”.

The bullish sentiment index is measured at a ratio of the number of bullish newsletters to the total number. Most importantly the bullish sentiment index is considered as a direct measure of investor sentiment and has been noted to be a good indicator of the market psychology (Pring, 1991). The sentiment index is also used as an indicator of the contrarian investment strategy. When most advisory services show the extremely bearish attitudes, the market is generally believed on the bottom of trough or on the way of recovery. On the other hand, when most advisory services show the extremely bullish attitudes, the market is on the peak or will go down soon. Colby and Mayers (1988) report that when the bullish sentiment index is 37.5%, it signals a coming bull market and when the bullish sentiment index is 78.2%, it predicts a forthcoming bear market.

To conclude, there are several main findings made by Lee et al (2002). First, investor sentiment is a significant factor to explain excess returns and conditional volatility of stocks. Excess returns are positively correlated with shifts in investor sentiment. Second, the greater magnitude of shifts in sentiment is, the more volatility of returns is. Moreover, the greater bullish shifts in sentiment are, the greater downward-revisions in volatility of returns are and the higher future excess returns are. Finally, the greater bearish shifts in sentiment are, the greater upward-revisions in volatility of returns are and the lower future excess returns are.

Implications on Decision Making for Investors in Financial Markets

So many considerable empirical evidences show that investor sentiment has impacts on prices formation of stocks and returns. In short, investor behaviors on financial markets cannot be ignored anymore. There are some suggestions for investors while making decisions, as follows:

First, investors should take contrarian investment strategy. Sometimes most investors are overoptimistic and chase some specific assets, thereby overvaluing these assets and increasing the risk that they should bear. However, the stock prices should regress to the mean in the long run. If investors take contrarian investment strategy, selling overpriced stocks or buying underpriced stocks, they can earn excess returns. Actually, the contrarian investment strategy is implied by the studies of De Bondt and Thaler (1985) and the research of Lee et al (2002).

Second, small capital stocks are more suitable for investors who can bear larger risk. The empirical results show that small capital stocks have higher positive weekly autocorrelation and imply that there is much investor sentiment involved (Lee et al , 2002) (Siegel ,1998). That is to say, the more investor sentiment is involved, the more unpredictability of investors' future beliefs is, and the larger risk of asset is. Consequently, investors can earn higher risk-adjusted returns by choosing small capital stocks into portfolios.

Third, choose undervalued stocks to gain higher returns. Actually, the stocks of lower market-to-book ratio and lower P/E ratio are relative undervalued. Moreover, investing the stocks of lower market-to-book ratio and lower P/E ratio can earn higher returns. On the other words, do not blindly follow the crowd and do not blindly chase the popular stocks in markets.

In conclusion, based upon many empirical results and studies, no doubt investor sentiment is a key factor on price formation of assets. The effects of investor sentiment on financial markets should be taken more into considerations. We should keep exploring more evidences of influences on investor sentiment and then provide more suggestions while making financial decisions.

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