

BEHAVIORAL BIASES IN TRADING SECURITIES

Dedu Vasile

The Bucharest Academy of Economic Studies

Turcan Radu

University of Oradea

Turcan Ciprian

The Bucharest Academy of Economic Studies

The main thesis of this paper represents the importance and the effects that human behavior has over capital markets. It is important to see the link between the asset valuation and investor sentiment that motivate to pay for an asset a certain prices over/below the intrinsic value. The main behavioral aspects discussed are emotional factors such as: fear of regret, overconfidence, perseverance, loss aversion, heuristic biases, misinformation and thinking errors, herding and their consequences.

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“Wall Street never changes, the pockets change, the suckers change, the stocks change, but Wall Street never changes, because the human nature never changes”.

- Jesse Livermore.

Much of the academic finance theory is based on the assumption that individuals act rationally and consider all available information in the decision-making process. But, the researchers have discovered in the markets, many irrational behavior and errors in judgment. Individuals consider the stock market as a person: with its own moods, sometimes it can be ornery or exuberant, may overreact and make amends next day, and so on.

Academic finance, the conventional part of the finance literature, is built on the arbitrage principles of Miller & Modigliani, the portfolio construction of Harry Markowitz, CAPM theory of Lintner and Sharpe, Black-Scholes, and Merton theories. The hypothesis that actual prices reflect fundamental values is the Efficient Markets Hypothesis (EMH). EMH was made famous by Eugene Fama (1970) and affirmed that no trader could “beat the market”, because under this hypothesis, “prices are right”, set by agents that understands Bayes’ Law and no investment strategy can earn better average returns than are warranted for its risk – there is “no free lunch”. The theory of “random walk” in asset prices that knowledge of the series of the past stock prices cannot be used to obtain higher return than a buy and hold strategy.

Behavioral finance that is, finance from a broader science perspective including sociology and psychology, is a new approach to financial markets, in response to the difficulties faced by the academic finance, until a few decades considered to be proved beyond doubt. Behavioral finance deals with understanding and explaining how rational and irrational traders interact, how may affect irrationality the assets prices. “Limits to arbitrage”⁴⁴³, form one of the two buildings blocks of behavioral finance. Psychology is the second building block of behavioral finance (people’s beliefs and people’s preferences). From the end of the 70s many studies revealed theoretical and empirical challenges to the efficient market hypothesis, (*limits of arbitrage*), studies that

⁴⁴³ Barberis, Nicholas & Thaler, Richard, 2003. "A survey of behavioral finance," Handbook of the Economics of Finance, in: G.M. Constantinides & M. Harris & R. M. Stulz (ed.), Handbook of the Economics of Finance, edition 1, volume 1, chapter 18, pages 1053-1128 Elsevier.

evidence inefficiency consistent with the strong and semi-strong form of the efficient market hypothesis: excess volatility, fundamental risk, noise trader risk, implementation costs, index inclusions, Price Earnings Ratio effects, Book to Value Ratio effects, liquidity effect, stock repurchases, mergers, momentum. The presence of occurring anomalies in academic finance, was a sound contributor in developing of behavioral finance.

Practically, behavioral finance studies mainly two aspects: *cognitive psychology* and *the limits of arbitrage*. Psychologists discovered many patterns, *cognitive biases* regarding people behave:

Overconfidence and wishful thinking

Overconfidence in decision-making process manifests in a number of ways. One of them might be the too little diversification, because of a tendency to invest too much in something what one is familiar with (a chemist or a doctor may invest rather in pharmaceuticals industry, a banker may invest particularly in financial companies, a real estate agent the real estate companies or some of the investors may invest very much in the company they work for - Enron. One study, by Olson and Cox (2001), has shown that individuals with similar training, professional experience and information, formulate distinctive judgments regarding their risk perception and their reaction to risk. On average, the study has shown that men have lower returns than women, because they trade more actively. Woman professional investors, have a tendency to focus on risk reduction more than male investors in portfolio management.

Prospect Theory and Loss aversion

Prospect theory⁴⁴⁴ was developed by Daniel Kahneman, professor at Princeton University's Department of Psychology, and Amos Tversky in 1979 as a psychologically realistic alternative to expected utility theory. The theory describes how people make choices in situations where they have to decide between alternatives that involve risk, decision processes consisting of two stages, editing and evaluation. Prospect theory may also explain some illogical financial behaviors, such as the disposition effect, with refers to the tendency of people to save money in bank to earn interest, who refuse to work extra-time because they don't want to pay extra taxes. Many academic experiments demonstrated that a loss bothers investors twice as much in absolute term than a pleasure from an equal profit. Because of the **loss aversion**, investors refuse to sell at a loss. There is an ego in each of us. No one likes to admit that he is wrong so, instead of taking a small loss, investors tend to wait too much for the reversal of the stock and the loss may rise even more. Often could be more profitable taking the small loss (right after the mistake was first realized), and reinvest properly the money than hoping too much to get to breakeven with a losing position. "They say you never grow poor taking profits. No, you don't. But neither do you grow rich taking a four-point profit in a bull market"⁴⁴⁵.

Anchoring

The concept of anchoring refers to the tendency to attach or "anchor" the thoughts to a reference point. The most frequent anchor is a past event or trend. For instance, some investors could tend to invest heavily in the stocks of companies that have fallen "too much" in a "two short" period of time, regardless of the fundamental matters. Investors anchor on the recent "high" and consider that the price drop provides an opportunity to buy the stock at a discount. "This semi sucker is the type that thinks he has cut his wisdom teeth because he loves to buy on declines. He waits for them. He measures his bargains by the number of points it has sold off from the top."⁴⁴⁶

Anchoring on historical price could harm much the investor's portfolios.

Belief perseverance

⁴⁴⁴ http://en.wikipedia.org/wiki/Prospect_theory

⁴⁴⁵ Jesse Livermore, Ch 4, Reminiscence of a Stock Operator

⁴⁴⁶ Jesse Livermore, Ch 5, Reminiscence of a Stock Operator

Once people have formed an opinion, they cling to it too tightly and for too long. They rather search for the news and analysis that confirm their beliefs than for the ones that may contradict their beliefs. People tend to misinterpret evidence that goes against their hypothesis as actually being in their favor. “One of the most helpful things that anybody can learn is to give up, trying to catch the last eighth or the first. These two are the most expensive eights in the world. They have cost stock traders, in the aggregate, enough millions of dollars to build a concrete highway across the continent”. “A speculator must concern himself with making money out of the market and not insisting that the tape must agree with him. Never argue with it or ask it for reasons or explanations” – Jesse Livermore. “When you begin to believe that a stock can only go in one direction, that is when you will have your head handed to you” – Dan Zanger

Framing

Framing refers to the format in which a situation or choice is presented (for instance, the same question, presented in two distinct but equal means, could extract identical or different response). An example of frame could be saying “there is 50% chance of success” instead of “50% chance to fail” – the famous half-full or half-empty glass. Mental frames are often linked to the language used, to stress the positive or negative aspects with adequate words and the consequences could be deciding with blinders. Framing can have different origins: personal cognitive bias – occasional or a habit (internal framing), or outside misinformation (external framing) done involuntarily (because of the incompetence of the author), or voluntarily by the “informer”: in order to manipulate the auditor.

Representativeness

Investors can make judgments based on stereotypes. They make assumptions based on information that has no bearing on reality. For instance, if a company with a history of releasing poor results will be perceived as a lousy company, and will get poor results in the future, even if lately the improvements are visible. Representativeness leads to the “sample size neglect” bias: a small sample can be just as representative as a large one. Investors tend to believe that a money manager with outstanding record for a few years will have outstanding results in the future – so called “hot hand” phenomenon. Rabin (2002)⁴⁴⁷ calls this the “law of small numbers”, the belief that even small samples will reflect the properties of the parent population, and could lead to a “gambler’s fallacy” effect when investors do not know the data-generating process (odds) in advance.

Gambler’s fallacy effect

In the gambler’s fallacy, a person erroneously believes that the onset of a certain random event is less likely to happen following an event or a series of events. This judgment is incorrect. A very common example can be found with people’s relationship with slot machines⁴⁴⁸. Most of these people believe that every losing pull will bring them that much closer to the jackpot. Related to investing decision-process, investors tend to liquidate a position after it has gone up in a series of subsequent trading sessions, because they don’t believe that is likely to continue going up and vice versa (maintaining a stock that “has fallen too much” and further declines are “improbable”). Jesse Livermore said something very important about gambling in the stock market: “Don’t trade when the market isn’t acting right! ...When prices drift up and down without trend, like a ship without a rudder, and few positive indications develop, the percentage of losing trades is apt to be high. When this condition continues it is well to hold off until the character of the market changes”...“When I couldn’t play according to my system, which was based on study and experience, I went in and gambled. I hoped to win, instead of knowing that I ought to win on

⁴⁴⁷ Rabin, M (2002), “Inference by believers in the law of small numbers”, *Quarterly Journal of Economics* 117:775-816

⁴⁴⁸ Phung, A., *Behavioral Finance* : http://www.investopedia.com/university/behavioral_finance/default.com

form”. . . . “There is the plain fool, who does the wrong thing at all times everywhere, but there is the Wall Street fool who thinks he must trade all the time. No man can always have adequate reasons for buying or selling stocks daily – or sufficient knowledge to make his play an intelligent play”.⁴⁴⁹

Forecasting errors:

It is quite usual that on tops many people to see that stocks prices may never fall and on the bottoms that the stock market may never recorded. The same thing could be seen with the oil prices: when oil was near 150\$ / Barrel many researchers and analysts predicted that there will be shortages of oil and the price will rise even more than 250\$/ Barrel in the near future term. But it went less than 50\$ in less than 12 months after those

”predictions”. When was reaching less than 40\$, many analysts forecasted that it could go even lower the price because of the world recession and the dumping global demand for oil – they were targeting the oil barrel price somewhere less than 25\$/barrel. Of course, that it did not happen that and the reversal to 80\$/ Barrel has begun. An interesting sample of excessive pessimism during the reversals, could be the following: “*But in November of 1974, I was newly married, and my husband and I decided that we should start saving. So we went to a broker and told him we wanted to buy some new shares. I still remember what he said: <<I really don’t think this is a good idea, a nice young couple like you – you really shouldn’t be putting your money into something as risky as stocks>>. “That’s how you can tell it’s a bottom”, added Allyn. “They don’t even want to sell you the stuff”.*

Conservatism

“A conservatism bias means that investors are too slow (too conservative) in updating their beliefs in response to recent evidence. Such a bias would give rise to momentum in stock market returns”- Bodie, Kane and Marcurs (2005). Investors tend to under react and delay the needed changes in their portfolio composition when the markets situation imposes, and financial analysts often adjust too slowly their previous estimates when new information should make them reanalyze the situation and prospects. The main causes could be: the inertia a quasi physical bias (neglecting, laziness, indifference, comfort found in keeping habits), emotional biases (self doubt, instinctive fear and mind paralysis, loss aversion, commitment, nostalgia, overconfidence, pride, ego), or cognitive biases (mental anchoring on an old reference or cognitive dissonance, like denial of reality).

The influence of worry

Worrying is a lasting concern with a past or an upcoming event. Investors feel fear (worry about uncertainties) and anxiety (the gut level feeling that accompanies uncertainty). In The Journal’s Intelligent Investor column of September 30, 2008⁴⁵⁰, Jason Zweig, considered some of the arguments referring that investors hate uncertainty: <<“Investors hate uncertainty.” Well, that’s just tough. Uncertainty is all investors ever have gotten, or ever will get, from the moment barley and sesame first began trading in ancient Mesopotamia to the last trade that will ever take place on Planet Earth. *If tomorrow were ever knowable with absolute certainty, who would take the other side of a trade today?* The financial future is no more uncertain now than it used to be; in fact, it’s far *less* uncertain than it was in the summer of 2007, when the Dow shot above 14000, the future seemed bright, and utterly no one foresaw the disaster that would befall the financial system. The absolute certainty of blue skies ahead was an illusion then, and the notion that we all know that worse misery lies in store is an illusion now. The only true certainty is surprise.>> . “People tend to underestimate low probability events when they haven’t happened recently, and

⁴⁴⁹ ⁴⁴⁹ Jesse Livermore, Reminiscence of a Stock Operator

⁴⁵⁰ Zweig, Jason – “The Depression of 2008? Don’t Count on it”, The Intelligent Investor Column, Wall Street Journal, 30. Sep. 2008 – <http://online.wsj.com/article/SB122272238714287459.html>

overestimate them when they have” – W. Buffett. “I don’t know whether I make myself plain, but I never lose my temper over the stock market. I never argue with the tape. Getting sore at the market doesn’t get you anywhere”. – Jesse Livermore

Mental accounting

Mental accounting refers to the tendency for people to separate their money into separate accounts based on a variety of subjective criteria, like the source of money and intent for each account. Investors divide their investments between a safe investment portfolio and a speculative portfolio in order to prevent the negative returns that speculative investments may have from affecting the entire portfolio. The problem is that the investor’s net wealth will be no different that if he had held one larger portfolio, because the money is fungible, regardless of its origins or intended use. It is just like having savings for a car, for a holiday while not paying the debts for the credit card, sometimes it makes more sense to liquidate the savings in order to pay off debt. Investors who tend to write – keep a journal of every transaction for a period of time, with individual profit or loss, tend to be more attentive with risks. Avoids gambling.

Confirmation and Hindsight Bias

In investing, confirmation bias suggests that an investor would rather look for the information that confirms his beliefs and ideas, rather for the one that contradicts it, even if all the information is against his beliefs, leaving investors with a false picture of the situation. Hindsight bias refers to situation where an investor believes (after the fact), that a past event was predictable and completely obvious, whereas in fact, the event could not have been reasonably predicted. The bias is very common after the bubbles burst. (Dot.com bubbles, South Sea bubble of 1711, Tulip bubble, the recent financial and economic crisis (2007), Crude oil price bubble (2008-2009). If the formation of an asset bubble had been obvious, it probably wouldn’t have escalated and burst like that. One of the old Wall-Street sayings is: “A bullish market is born amid pessimism, grows up under skepticism, matures with optimism and dies with euphoria”.

The role of affects – feelings

One of the major mistakes in investing, is falling in love with a stock. Investors are human, and humans don’t like to admit that are wrong. It happens to everyone. Never fall in love with a losing position and use a stop-loss order to protect against excessive losses. Some of the Wall-Street sayings are: “The market doesn’t know whether you’re long or short and it couldn’t care less”; “The more you lose in a trade, the less objective you become. EXITING A LOSING TRADE, clears your head and restores your objectivity”. One day, Marty Schwartz was asked: “Why do most traders lose money? Because they would rather lose money than admit they’re wrong. What is the ultimate rationalization of a trader in a losing position? “I’ll get out when I’m even”. Why is getting out even so important? Because it protects the ego. I became a winning trader when I was able to say, “*The hell with my ego, making money is more important*”. “I made a big mistake in not selling several of our larger holdings during The Great Bubble. If these stocks are fully priced now, you may wonder what I was thinking four years ago, when their intrinsic value was lower and their prices far higher. So do I” – Warren Buffett, 2003, Berkshire Hathaway annual report.

Herd Behavior

Herd behavior, refers to the tendency of people to mimic actions (rational or irrational), of a larger group. Some of the reasons for creating the herd effect could be: the social pressure of conformity (Dot.com bubble, maybe the most infamous financial event – bursting the internet bubble) – people are very sociable and have a natural instinct to be accepted by the group, rather than named to be as an outcast (following a group is an ideal way of becoming one of them). The second reason could be the common sense that “such a large group cannot be wrong”, “they must

know something that you don't". It happens to novices very often to follow the herd. Even professionals tend to follow the crowds, because if the strategy works, their clients will be happy, if not, he could justify his bad investment decision by pointing out just how many other investors were led astray. It is a good strategy to follow the herd, if you enter in the positions right at the beginning of trend. "When the market gets greedy, I get nervous; when the market gets nervous, I get greedy" – Warren Buffett. "By 1929, it seemed as though everyone, in all walks of life, and not just businessmen, was interested in the stock market. People took out second mortgages on their home and housewives sneaked money from household expenses to play the market. Some people invested everything they had in the market in the belief that there was no way they could NOT become rich"⁴⁵¹.

Conclusions

The greatest critique of behavioral finance is that it is not considered an actual science, like the quantitative finance. It is too general. It is not possible to calculate and quantify exactly behavioral factors neither for one person nor for a crowd. Behavioral finance should be regarded as a useful toolkit when trading because it could give a competitive advantage in trading and a better knowledge of it. As Jesse Livermore said, it is very important to learn from our mistakes and understand the market in a better way: "*It wasn't anything to be proud of, when you think I had been broke three times in less than two years. And as I told you, being broke is a very efficient educational agency. It is literally true, that millions come easier to a trader after he know how to trade, than hundred did in the days of his ignorance*" – Jesse Livermore.⁴⁵²

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⁴⁵¹ Lange, Brenda, "Milestones American History – The Stock Market Crash of 1929, The End of Prosperity" Chelsea House Publishers, Infobase Publishing, New York, 2007.

⁴⁵² **Jesse Livermore** (1877 - 1940), also known as the **Boy Plunger**, was an early 20th century stock trader. During his lifetime, Livermore gained and lost several multi-million dollar fortunes. Most notably, he was worth \$3 million and \$100 million after the 1907 and 1929 market crashes, respectively. He subsequently lost both fortunes. Apart from his success as a securities speculator, Livermore left traders an outstanding working philosophy for trading. – Source: http://en.wikipedia.org/wiki/Jesse_Lauriston_Livermore

Our study examines behavioral biases by focusing on the relationship between profits and subsequent risk-taking activity across the trading day. Before proceeding, it is important to understand how this relationship should look under various sets of assumptions. All of our tests begin with the null hypothesis that profits are not related to future risk-taking activity. This null will be valid in a setting where traders have standard Von Neumann-Morgenstern expected utility, profit opportunities are uncorrelated across the trading day, wealth effects are negligible, margin effects are unimportant, and tr...