

Exploring Investors' Behavior: Evidence from Amman Stock Exchange

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ABSTRACT

This paper is motivated by the research of Zoghalmi and Matoussi (2009). It is an attempt to identify the main psychological biases that may influence the investment behavior and drive a momentum effect in Amman Stock Exchange. In order to achieve this purpose, six psychological factors were selected from previous theoretical and empirical research in behavior finance and contextual data sources. The data was collected through a structured questionnaire that consisted of indirect questions followed by a set of responses associated with the different predetermined behavioral factors. Respondents were a sample of active brokers in Amman Stock Exchange. The results revealed that self attribution, opportunistic behavior, sensitivity to rumours and the mimicking attitude and to a less extent overconfidence seem to influence the investment behavior of the Jordanian investors.

Keywords: Behavioral finance, Amman Stock Exchange (ASE), Momentum, Overconfidence, Self attribution, Conservatism, Opportunism, Rumours, Mimicking attitude.

INTRODUCTION

The classic paradigm of financial theory assumes that investors are rational in terms of making investment decisions. Investment rationality refers to using unbiased valid reasoning to buy or sell assets and build portfolios. This unbiased reasoning is viewed in the trade-off between risk and return as theoretically formed in the Modern Portfolio Theory (MPT), the Capital Assets Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT).

While the theoretical foundations are robust, the real application is not. This is evident by the enormous empirical research that shows expected returns to vary due to variables other than risk. Among these variables, the market value of equity (Banz, 1981), earning yields (Basu, 1977, 1983), leverage (Bhandari, 1988), book-to-market equity (Stattman, 1980; Rosenberg, Reid and

Lanstein, 1985; Chan, Hamao and Lakonishok, 1991) and prior returns; contrarian and momentum (DeBondt and Thaler, 1985, 1987; Jegadeesh, 1990; Lehmann, 1990; Jegadeesh and Titman, 1993; Chan, Jegadeesh and Lakonishok, 1996; Asness, 1994).

At first, these anomalies (as not supported by theory) have encouraged researchers to ask empirical questions regarding the validity of such results, their relationships with each other and whether there are similar effects in other countries or not. The notable feature, however, is the regularity of the anomalies across most studies and countries. This feature inspired researchers to attempt to move further in order to rationalize the so-called anomalies.

Many explanations have been proposed including: (i) the specification of the empirical model and/or the research design being poor, which might result from the incorrect choice of the market index (Roll, 1977; Roll and Ross, 1994), survivorship bias due to data limitations (Kothari, Shanken and Sloan, 1995; Breen and Korajczyk, 1995) and the failure to allow for time-

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varying betas (Jagannathan and Wang, 1996); (ii) the statistical biases associated with testing of the empirical model like data snooping (Lo and MacKinlay, 1990; Black, 1993), the errors-in-variables problem (Kim, 1995) and the presence of outliers (Knez and Ready, 1997); (iii) the systematic mispricing in the stock market and the existence of naive (irrational) investors (Lakonishok, Shleifer and Vishny, 1994).

However, in the last explanation this research is concerned. It is well perceived that behavioral approaches can help explain a number of important financing and investment patterns. The "irrational investors approach" assumes that markets are imperfect, and thus prices and returns are too high or too low compared to fundamentals. Therefore, the purpose of this research is to investigate and identify the psychological factors that influence investment decisions in Amman Stock Exchange (hereafter, ASE). Identifying these factors is expected to help policy makers develop the stock market in Jordan and investors avoid investments mistakes.

The remainder of the paper is organized as follows. The relevant literature relating to behavioral finance is reviewed. Then, the motivation and the hypothesis are presented. Then, the sampling and the research methodology are shown. The results and conclusions come then, followed by the references.

Previous Research

Research in cognitive psychology and decision sciences has documented that under certain conditions, individuals systematically make errors in judgment. If this is true, then errors in judgment can cause investors to form biased expectations regarding the future which, in return, can cause securities to be mispriced. As such, "Behavioral Finance" emerged as an attempt to provide a better understanding into how human emotions and cognitive errors influence investors and their investment

decisions.

Kahneman and Tversky (1974, 1979), and Alpert and Raiffa (1982) were among the first to boldly apply psychology to financial economics. During the course of developing their "Prospect Theory" Kahneman and Tversky (1979) showed that humans are risk-averse in gains but risk-takers in losses. Kahneman and Tversky (1974) and Alpert and Raiffa (1982), on the other hand, showed that individuals, when making decisions under uncertainty, usually fear regret, overestimate their confidence and use heuristics (or shortcuts) that reduce complex problem solving to more simple judgmental operations. Since then, many researchers have formed theories and extended the empirical testing in order to understand how investment decisions are made (see for example Shefrin and Statman, 1984, 1994; Shiller, 1990, 2000; Nagy and Obenberger, 1994; Thaler et al., 1997; Oden, 1998; Barberis et al., 1998; Nofsinger, 2002; Krishnan and Booker, 2002; Baker and Nofsinger, 2002; Kadiyala and Rau, 2004).

The behavioral models in finance have been most successful in explaining stock price anomalies related to over-reaction, under-reaction, momentum, size and BE/ME effects. Barberis, Schleifer and Vishny (1998) attributed overreaction and underreaction to information in prices to bias by conservatism and the representativeness heuristic in investors' reaction. Daniel, Hirshleifer and Subramanyam (1998), on the other hand, explained that price anomalies are related to the cognitive biases of investor overconfidence and self-attribution. In a similar study, Daniel and Titman (1999) asserted that the superior returns of momentum investing over the previous 35 years were a result of overconfidence. From another perspective, Chan (2003) found that price reversals occur when the majority of market agents follow the same investing strategy (buying or selling), unsupported by new information.

One of the most recent empirical studies is Zoghلامي and Matoussi (2009). The research was primarily concerned with the identification of the main psychological biases that influence the Tunisian investors' behavior and, hence, may drive a momentum effect. In order to achieve its purpose, the study uses a survey approach. The results show that that precaution, under-confidence, conservatism, under-opportunism and informational inferiority complex are the main psychological factors that affect Tunisian investors when making investment decisions. Chandra and Sharma (2010) replicated the study of Zoghلامي and Matoussi (2009) on the Indian stock market and reached similar results.

Motivation

This research is motivated by the research of Zoghلامي and Matoussi (2009). It is an attempt to understand the investors' behavior that drives a momentum effect in ASE found in previous empirical research (see, for example, Saleh, 2007 and Saleh and Al-Sabbagh, 2010 for the existence of a momentum effect in ASE).

The research will try to identify from the real context the behavioral biases which seem to influence the Jordanian investors. Unlike previous empirical studies which gave an explanation to the momentum effect using extrapolation from psychology, this study attempts to test the existence of the psychological biases assumed by literature to drive the momentum effect and to determine the contextual psychological biases that seem appropriate to Jordanian investors.

Hypothesis

The primary hypothesis of the research is that there are certain psychological factors that might divert Jordanian investors' behaviors from rationality when investing or disinvesting in stocks listed in ASE. The psychological factors of interest to this research were

selected from previous theoretical and empirical research in behavior finance as follows:

The overconfidence bias: Fischhoff, Slovic and Lichtenstein (1977), Alpert and Raiffa (1982) and Daniel, Hirshleifer and Subrahmanyamm (1998) considered the overconfidence bias, particularly when emitting orders and/or when talking about anticipations and expectations, to be one of the psychological factors that might cause the momentum effect.

Self attribution bias: The self attribution bias is related to the reaction when investors realize or do not realize their prior positive anticipations relative to some stock price. For example, when investors realize their prior positive anticipations, they maintain their overconfidence and allow prices to continue to overreact, creating momentum. This bias is documented by Langer and Roth (1975), Fischhoff (1982) and Daniel, Hirshleifer and Subrahmanyamm (1998).

The conservatism bias: According to Bodie, Kane and Marcus (2008), the conservatism bias occurs because investors are too slow in updating their beliefs (too conservative) in response to recent evidence (good or bad news). This bias is documented by Edwards (1968), Barberis, Shleifer and Vishny (1998) and Hong and Stein (1999).

In addition to the previous factors, this research uses a set of psychological factors that have been identified from contextual data sources, mainly a sample of Jordanian stock brokers. On daily basis, stock brokers receive and execute purchase and sale orders and are in direct contact with the Jordanian investors. As a result, brokers represent the best source for identifying behavioral peculiarities that may be shown by the Jordanian investors in the stock market. Based on an interview with 50 licensed brokers in ASE, the following psychological factors were assumed to influence investors when making investment decisions:

The opportunistic behavior: Attributed to the intervention volume or the nature of orders emitted when hearing about some opportunity.

Sensitivity to rumours: Refers to the investor's reaction when hearing rumours about the stock.

The mimicking attitude: Refers to the investor's reaction when identifying some prior positive or negative stock price movements without proper knowledge about the causes of such movements or when copying other investors' behavior when emitting orders.

Sampling and Research Methodology

The primary data of this research is collected through a questionnaire which consists of indirect questions to avoid any potential orientation. Each question starts with a particular scenario or situation that may happen in the stock market, followed by a set of responses associated with the different predetermined behavioral factors. For example, to underline the self attribution bias, the questionnaire proposes a scenario in which the investor detects a decrease in stock prices when he had anticipated an increase. Responses for this scenario ranged from continuation of stock purchases to massive sale behavior of the stock. As a psychological attitude, the massive sale behavior is assumed to be followed by investors that are not subject to self attribution bias, whereas the massive purchase behavior is assumed to be followed by investors who are very influenced by the self attribution bias.

Respondents were chosen randomly from among ASE active brokers. Selection of brokers over stock market investors was due to the fact that individual investors might change their real behavior and show some perfect and faultless behavior when answering the questionnaire. Stock brokers, on the other hand, are in daily contact with the investors and receive and execute orders, thus, can transmit objectively the investors' behavior and attitude.

Currently, there are 67 brokerage companies licensed by the Jordan Securities Commission (JSC) and ASE with an average number of licensed brokers of 4 each, making the total number of brokers around 270. The total number of questionnaires distributed to brokers amounted to 150 questionnaires or to around 56% of the total population. Out of the total, 105 questionnaires were received from the brokers or around 70% response rate. However, 8 filled questionnaires were found to be useless due to incomplete or insufficient information. Consequently, the final sample amounted to 97 filled-in questionnaires.

To collect the desired information, brokers were asked to give each response the most correct percentage which describes the behavior of their clients. Therefore, the study uses the Likert constant sum scale of 100%. The percentages are assumed to measure the degree of bias of the psychological factors considered earlier. Based on average responses from all respondents, the study then attempts to conclude the importance and the influence of the psychological factors in ASE. The total number of questions presented in the questionnaire was 12 questions with a total number of responses of 42 of which each was treated as a variable. Table 1 presents the questions and their corresponding bias objects, corresponding scenario broad lines, the different potential behavioral attitudes (in terms of coded variables) and the respective psychological attitude assigned to each response.

This methodology is both exploratory and confirmatory. It can be regarded as exploratory because it attempts to identify the psychological biases among Jordanian investors. It may be assumed confirmatory as it is used for testing the degree to which the psychological biases suggested by the theory really exist in ASE.

Table 1: Variables' Definitions.

Question	Question's Aim	Scenario Broad Lines.	Variable Code	Potential Behavior that the Investor Might Show When Facing the Situation Described by the Question	Psychological Attitude
1	Overconfidence Bias	Attitude When Giving Orders.	V1	Sure Order Transmission	Overconfidence
			V2	Hesitant Order Transmission	Relative Underconfidence
			V3	Follow Broker's Advice	Underconfidence
2	Bias	Attitude When Giving Orders and When Talking about Anticipations and Expectations.	V4	Sure in Expectations	Overconfidence
			V5	Not Sure in Expectations	Relative Underconfidence
			V6	No Opinion in Expectations	Underconfidence
3	Self Attribution Bias	Reaction When the Investor's Positive Anticipations about Some Stock Price Materialize.	V7	More Excessive Purchase Orders	Self Attribution Bias
			V8	Abstention and No Reaction	Relative Self Attribution Bias
			V9	Begins to Sell and Reduce His Position	Weak Self Attribution Bias
			V10	Excessive Sale Orders	No Self Attribution Bias
4	Bias	Reaction When the Investor's Positive Anticipations about Some Stock Price Do Not Materialize.	V11	Continue to Buy the Stock	Self Attribution Bias
			V12	Abstention and No Reaction	Self Attribution Bias
			V13	Begins to Sell and Reduce His Position	Weak Self Attribution Bias
			V14	Excessive Sale Orders to Liquidate the Position	No Self Attribution Bias
5	Over-or Under-Opportunism	The Intervention Volume When the Investor Hears about Some Opportunity.	V15	Buy a Large Number of Shares	Overopportunistic
			V16	Buy a Medium Number of Shares	Relatively Opportunistic
			V17	Buy a Low Number of Shares	Underopportunistic

Question	Question's Aim	Scenario Broad Lines.	Variable Code	Potential Behavior that the Investor Might Show When Facing the Situation Described by the Question	Psychological Attitude
6		The Nature of Orders Transmitted to Brokers When Hearing about Some Opportunity.	V18	Open Orders	Overopportunistic
			V19	Limit Orders	Underopportunistic
7		Reaction When the Investor Receives Bad News Concerning Some Stock .	V20	Indifferent	Conservatism
			V21	Hesitant	Conservatism
			V22	Maintain Position	Conservatism
			V23	Sell and Liquidate Position	No Conservatism
			V24	Reduce His Position	No conservatism
8	Conservatism	Reaction When the Investor Receives Good News Concerning Some Stock.	V25	Abstain and Wait for Market Reaction	Conservatism
			V26	Abstain and Wait for Other News	Conservatism
			V27	Buy Slowly Waiting for Market Reaction	No Conservatism
			V28	Buy Full Immediately When Positive Information Arrives	No Conservatism
9	Sensitivity to Rumours	Reaction When the Investor Hears Good Rumours Regarding Some Stock.	V29	Buy Aggressively	High Sensitivity
			V30	Buy Slowly	Low Sensitivity
			V31	Abstain and Wait for the Confirmation of Rumours	Not Sensitive
			V32	Abstain and Wait for Market Reaction	Not Sensitive
10		Reaction When the Investor Hears Bad Rumours Regarding Some Stock .	V33	Sell Aggressively	High Sensitivity
			V34	Sell Slowly	Low Sensitivity
			V35	Abstain and Wait for the Confirmation of Rumours	Not Sensitive

Question	Question's Aim	Scenario Broad Lines.	Variable Code	Potential Behavior that the Investor Might Show When Facing the Situation Described by the Question	Psychological Attitude
			V36	Abstain and Wait for Market Reaction	Not Sensitive
11	Mimicking Attitude	Investors Give Orders When Identifying Some Prior Positive or Negative Stock Price Movements without the Proper Knowledge about the Cause(s) of Such Movements.	V37	Follow the Market and Buy/Sell Aggressively	Pronounced Mimicking Attitude
			V38	Follow the Market but Buy/Sell Slowly	Relative Mimicking Attitude
			V39	No Reaction and Prefer First to Understand	No Mimicking Attitude
12	Mimicking Attitude	Investors Follow Other Investors and Copy Their Behavior When Transmitting Orders.	V40	Follow Other Investors and Buy/Sell Aggressively	Pronounced Mimicking Attitude
			V41	Follow Other Investors but Buy/Sell Slowly	Relative Mimicking Attitude
			V42	No Reaction and Prefer First to Understand	No Mimicking Attitude

RESULTS

Table 2 presents summary statistics for the responses collected throughout the questionnaire. The descriptive statistics will permit the deduction of conclusions regarding the behavioral biases that seem to influence the Jordanian investors. The table displays the means and the medians of percentage responses, the standard deviations and the minimum and maximum values.

Results presented in the table show the following:

- **The overconfidence influence:** Being overconfident in transmitting trading orders and talking about future expectations seem to be associated with

around 40% and 36% of Jordanian investors as evident from the averages of V1 and V4, respectively. These investors are characterized by being overconfident, sure, rigid and definitive and not interested in others' opinions or reactions. The remaining, however, appear to be underconfident, very hesitant, defiant and very sensitive to others' opinions and reactions.

- **Self attribution influence:** The results clearly show the existence of a self attribution bias among the Jordanian investors. This is evident from the average values of variables V7, V8, V9 which are associated with "when positive anticipations materialize" and V11,

V12, V13 which are related to “when positive anticipations do not materialize”. The sum of averages for the three variables when positive expectations materialize amounts to 93%, whereas the sum of averages for the three variables when expectations do not materialize amounts to 78%. Variable 14, however, shows that 22% of the investors in ASE recognize their mistakes and quickly revise their anticipations to limit their potential losses.

- **Over- and under- opportunism:** The analysis gives mixed results. In regards to volume, when investors hear about some opportunity as defined by scenario 5 and variables V15 and V16, around 87% of the Jordanian investors buy large and medium numbers of stocks to benefit from the opportunity. However, in relation to price, only 42% of the Jordanian investors are willing to pay any price to benefit from the opportunity. The remaining, or 58%, limit their order to some specific predetermined price.

- **Conservatism bias:** Two scenarios were proposed to brokers in order to investigate the extent to which conservatism bias influences Jordanian investors when making investment decisions; when hearing bad or good news released by some company. Average responses of the two scenarios are presented in variables from V20 to V28. The results show that 37% of the Jordanian investors are conservative when it comes to bad news and 40% of them are conservative when it comes to good news about some stock in the market. In contrast, around 60% of the investors react instantly to current news in their selling and buying decisions as evident from the sum of averages of variables V23 and 24 and the sum of averages of variables V27 and V28.

- **Sensitivity to rumours:** The effect of rumours on investment decisions is presented by the average responses of variables V29, V30, V33 and V34 (either by purchasing orders if the rumour is positive or through

selling orders if the rumour is negative). The sum of average responses of variables V28 and V29 when hearing good rumours is 69%. However, only 21% of the investors appear to be aggressive buyers; while 47% react and buy slowly after hearing good rumours. When hearing bad rumours about some stock, 12% of the investors sell the stock aggressively; while 53% sell the stock slowly. Therefore, it can be concluded that the Jordanian investors seem to be very sensitive to rumours and expect them to be insider information.

- **Mimicking attitude:** One of contextual behavioral attitudes revealed by stock market traders is the mimicking attitude. The results printed in Table 2 confirm what has been communicated by the traders. This behavioral tendency is appreciated in the questionnaire by variables V37, V38, V40 and V41. Without the proper knowledge of the cause of the positive movements in the market, 72% of the Jordanian investors follow the market. Additionally, 83% of the Jordanian investors copy the buying and selling behavior of other investors in the market.

Table 2: Descriptive Statistics.

Variable	Mean	Median	Standard Deviation	Min. Value	Max. Value
V1	40%	35%	18%	15%	75%
V2	38%	35%	16%	10%	70%
V3	22%	20%	12%	10%	60%
V4	36%	35%	15%	10%	60%
V5	42%	45%	15%	10%	60%
V6	22%	20%	11%	10%	60%
V7	39%	35%	16%	10%	60%
V8	38%	35%	15%	10%	65%
V9	16%	15%	8%	10%	50%
V10	8%	5%	6%	5%	50%
V11	7%	5%	4%	0%	20%

Variable	Mean	Median	Standard Deviation	Min. Value	Max. Value
V12	29%	25%	16%	0%	60%
V13	42%	40%	16%	10%	90%
V14	21%	20%	9%	5%	40%
V15	39%	35%	18%	5%	75%
V16	48%	45%	18%	20%	90%
V17	13%	10%	9%	5%	50%
V18	42%	45%	27%	10%	90%
V19	58%	55%	27%	10%	90%
V20	7%	5%	4%	0%	30%
V21	17%	15%	8%	0%	50%
V22	13%	10%	8%	0%	40%
V23	21%	20%	9%	5%	40%
V24	42%	40%	17%	0%	80%
V25	18%	15%	7%	0%	30%
V26	22%	20%	7%	0%	30%
V27	18%	15%	4%	15%	30%
V28	42%	40%	9%	10%	60%
V29	21%	20%	8%	5%	50%
V30	47%	45%	14%	20%	70%
V31	18%	15%	5%	5%	40%
V32	14%	10%	10%	5%	40%
V33	12%	10%	4%	5%	40%
V34	53%	50%	13%	10%	80%
V35	23%	20%	8%	5%	40%
V36	13%	10%	10%	5%	50%
V37	38%	35%	17%	10%	70%
V38	35%	30%	15%	10%	70%
V39	28%	25%	13%	10%	70%
V40	28%	25%	12%	10%	60%
V41	54%	50%	13%	10%	70%
V42	18%	15%	13%	5%	60%

Conclusions and Recommendations

This research attempts to identify the psychological

biases that may drive a momentum effect in ASE. Six psychological factors were selected from previous theoretical and empirical research in behavior finance and contextual data sources. The factors under consideration were: overconfidence, self attribution, conservatism, opportunistic behavior, sensitivity to rumours and mimicking attitude. The primary data was collected through a questionnaire which consisted of indirect questions in order to avoid any potential orientation. Respondents were chosen randomly from among ASE active brokers as it is been assumed that they can transmit objectively the investors' behavior and attitude.

The results revealed that five out of the six listed psychological biases were found to be influential, though at varying degrees. The psychological factors that seem to highly influence the investment behavior of Jordanian investors are: self attribution, opportunistic behavior, sensitivity to rumours, mimicking attitude and to a less extent overconfidence. The results are of great concern to investors, policy makers and regulators of the stock market. Therefore, the following recommendations are appropriate in order to practice better investment management practices:

- It is required by regulators and policy makers to increase transparency in the market and to frequently update investors with the exchange circulars and disclosures.
- Regulators are required to publish investment manuals concerned about how to invest, build portfolios, read financial information,... etc. in order to increase awareness and prevent acts which are considered manipulative or deceptive.

It is important for the investors to be provided with information about the previous psychological factors presented earlier and how they affect investment decisions in order to decrease the effect of biases on stock prices.

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