“Why Do They Earn More Than Me?” Psychological Antecedents of Investment Performance

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Abstract

The investment performance of investors varies from one to another. Investment performance is influenced by many factors. The study aimed to examine the relationship between psychological antecedents and investment performance. The research was applied questionnaires to collect data. 108 questionnaires were collected and analyzed. The assumption was made that all respondents had limited rationality. The results indicated that overconfidence and price anchoring have positive effects on investment performance. Further to this, loss aversion, representativeness, and mental accounting have negative effects on investment performance.

Key Words: Investment performance, loss aversion, representativeness, mental accounting

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INTRODUCTION

Background

People work hard every single day for the main purpose of earning money. In the past, people used to save money into the banks as it is secure without risks. They also could receive some interest from the banks. At that time, people were low educated, and the technology was not advanced. What they could think about the best way to deal with extra money was to put it either in the banks or post offices. Besides, there were few financial tools for them to manage their finance. However, things have become more and more expensive, and the products have developed into diverse. The same amount of money from the past cannot buy the same thing today. Although the GNI has gradually increased from US$25,704 to US$26,514 per person in the latest three years[1], the desire for the newest products has grown as well. In addition, people cannot earn some money from the banks as before because the interest rates are low. The high prices of commodities and housing accompanied with the low interest rate have resulted in people (especially the young generation) not being able to afford to raise children or buy a house. In addition, the rich wants to be richer. Within this phenomenon, it is crucial for individuals to maximize the profits generated from their limited wages and their savings.

Motivation

Investment is a general way to increase wealth. Most of the people in Taiwan like to invest their money into the stock market for multiple reasons. First, it is a mature market. Second, it is easy for people to open an account and invest in the stocks. Third, the most appealing point is that middle-class citizens can participate in it even if they have limited

[1] R.O.C. National Statistics, https://www.stat.gov.tw/ct.asp?xItem=33338&ctNode=3565.

funds to invest. For these reasons, investment in the stock market has become a popular activity in society.

In the efficient market theory, people are assumed to be rational and could analyze all the accessible information.[2] However, this assumption was questioned by several economists and psychologists when investors became involved in the stock market.[3] People exhibit their irrationality arbitrarily in the market. Within the range of decisions made about equity investment, human emotions and intuition played important roles while information was abundant and uncertainties were high.

To be successful with investment, it requires knowledge and experience. Not all investment opportunities will lead to success. The investors may not exercise the correct judgement to purchase the right stocks at the right time. Alternatively, they may place various levels of trust in the information from the internet, companies, friends, family and colleagues and experts that are not always reliable.

The percentage of the individual investors who have involved in the stock market in Taiwan is very high. The individual investors are composed of the 57.9% transaction value in the first quarter this year.[4] These investors should be nurtured and guided. Otherwise, the bad decisions they made could cause them to lose money in the stock market, which may lead to turbulence in Taiwan's economy. The occurrence of this motivates me to explore the factors that influence the investment performance. Thus psychological factors will be further explored.

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[2] Robert J Shiller, "Human Behavior and the Efficiency of the Financial System," *Handbook of macroeconomics* 1 (1999).
[3] R Isidore and P Christie, "Review of Behavioral Biases-an Individual Equity Perspective," *International Journal of Advanced Research. https://doi. org/10.21474/IJAR01/6265* (2018).
[4] R.O.C. National Statistics, "證券市場月訊,"
https://www.twse.com.tw/staticFiles/product/publication/0005000037.pdf

Research Purpose

This study examines the relationships between psychological factors and investment performance. The purpose of this research is to determine the appropriate way to enhance the opportunities of investors in the stock market so that they can benefit from their financial activities.

Research Questions

The Survey contained six parts with 74 questions were delivered to the investors in Kaohsiung. The questions contain three components leading to investment performance: What are the psychological antecedents of investment performance?

Contributions

This paper aimed to provide assistance to potential investors in terms of their experiences while investing their money. This includes how to exercise better emotional regulation and how to acknowledge your own strengths and weaknesses while investing money. As a result, people can overcome their shortcomings and potentially have a more fulfilling experience on the investment road.

Limits

The study has two limitations. Firstly, the proportion of the participants responding to questionnaires was not large compared to the total investment population. The limitation of the research is the size of the sample which is sufficient but not enough to be generalized. It cannot represent an overall scope of responses. Secondly, the factors that influence the investors in the stock market are various. The research focuses on the certain unique factors that are seldom investigated in the stock market, as it is too complicated to discuss too many factors in one article. This would dilute the main topic.

Delimits

There are many factors that would influence the investment performance. These factors could include interest rate[5], economic growth[6], technological developments[7], and inflation[8]. These factors are often discussed in the studies. Each factor contains a lot of detail and information to be understood and analyzed. The Researcher has chosen not to include them in the study because of the limitation of time.

The aim of this research is to explore the factors that mainly influence individual investment performance in the stock market. Therefore, the questionnaires were randomly distributed over the respondents that have had their investment experience in this market. The research concerns the investment performance affected by the significant cognitive behavior. This is different from most of the research that discussed the investment performance from the aspects of financial behavior. This research investigated it from the psychological antecedents.

[5] Suyuan Li and Adnan Khurshid, "The Effect of Interest Rate on Investment; Empirical Evidence of Jiangsu Province, China," *Journal of International Studies* 8, no. 1 (2015).
[6] Dennis Anderson, "Investment and Economic Growth," *World Development* 18, no. 8 (1990).
[7] Christian Riis Flor and Simon Lysbjerg Hansen, "Technological Advances and the Decision to Invest," *Annals of Finance* 9, no. 3 (2013).
[8] Yaniv Konchitchki, "Inflation and Nominal Financial Reporting: Implications for Performance and Stock Prices," *The Accounting Review* 86, no. 3 (2011).

LITERATURE REVIEW

Investment Performance

Investment performance is very important. The study looks at the statistics on this topic. According to the information from Taiwan Stock Exchange Corporation (TWSE), the number of quarterly trading from the retail investors has increased sharply to 10,893.85 billion dollars in the first quarter this year.[9] In proportion to transaction value, the individual investors accounted for 57.92% of Taiwan stocks in the first quarter.[10]

A great number of financial economists focused on analyzing the stock returns from mutual funds and pension funds. Little research emphasized on the individual investment performance.[11] Since most of the research pay much attention on the performance in big organizations, and the retail investors that make up a great number value of the stock market are often ignored. This paper aims to discuss the situation they might face.

The concept of "performance" is divided into two definite dimensions:

1) Being able to maximize returns on the portfolio by a successful presumption of the future security worth.[12]

2) Being able to reduce the considerable amount of insurable risk by the portfolio holders.[13]

It is also defined as the profits gained from general stock investment.[14]

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[9] National Statistics, "證券市場月訊".
[10] Ibid.
[11] Brad M Barber and Terrance Odean, "Trading Is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors," *The journal of Finance* 55, no. 2 (2000).
[12] Michael C Jensen, "The Performance of Mutual Funds in the Period 1945-1964," *The Journal of finance* 23, no. 2 (1968).
[13] Ibid.
[14] Wilbur G Lewellen, Ronald C Lease, and Gary G Schlarbaum, "Investment Performance and Investor Behavior," *Journal of Financial and Quantitative Analysis* (1979).

Some researchers discovered a number of factors could influence investment performance. A study found out that sophistication influence trading performance.[15] Investment strategies[16], behavioral factors[17] could affect performance as well.

Normally, high-risk stocks are related to high returns. There are still high-risk stocks with lower returns as well, and mostly difficult to be explained by the outcome of both efficient and inefficient markets. Because this circumstance tends to contravene the theory of high-risk high returns, it is determined as a low-volatility anomaly.[18] Individual investors often perform poorly. In contrast, foreign investors learn high returns by grasping market timing.[19]

From the aspect of gender difference, a study pointed out that women outperform men because men trade more than women.[20] From the behavioral aspect, another study indicated behavioral factors Influence on investment performance.[21] The study discusses from the aspects of the prospect theory, heuristics theory, market factors and herding effect. In addition, a study shows that Investors with outstanding financial knowledge can accumulate wealth because they are able to reduce the cost of collecting available information when they

[15] Gong-Meng Chen et al., "Behavior and Performance of Emerging Market Investors: Evidence from China," *unpublished Washington State University Working paper (January)* (2004).
[16] Wei-Kai Chen, "The Research Comparison of Stock Choosing Strategy – a Study in Taiwan Publicly Traded Company," (2012).
[17] Lingesiya Kengatharan and Navaneethakrishnan Kengatharan, "The Influence of Behavioral Factors in Making Investment Decisions and Performance: Study on Investors of Colombo Stock Exchange, Sri Lanka," *Asian Journal of Finance & Accounting* 6, no. 1 (2014).
[18] Andrew Ang et al., "High Idiosyncratic Volatility and Low Returns: International and Further Us Evidence," *Journal of Financial Economics* 91, no. 1 (2009).
[19] Akiko Kamesaka, John R Nofsinger, and Hidetaka Kawakita, "Investment Patterns and Performance of Investor Groups in Japan," *Pacific-Basin Finance Journal* 11, no. 1 (2003).
[20] Brad M Barber and Terrance Odean, "Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment," *The quarterly journal of economics* 116, no. 1 (2001).
[21] LMCS Menike, Priyanga Dunusinghe, and Athula Ranasinghe, "Behavioural Factors Influence on Investment Performance: A Survey of Individual Investors at Colombo Stock Exchange" (paper presented at the Proceedings of 10th Annual London Business Research Conference, 2015).

make an investment.[22] Besides, they are likely to make plans beforehand, this behavior leads them to have successful performance.

Psychological Factors

Overconfidence

It can be summed up as unjustified faith in one's instinctive reasoning, determination and analytic abilities.[23] Investors are confident about the forecast of future investment income from investing in specific assets.[24] Psychological studies show that people with overconfidence tend to believe they possess precise and advanced knowledge.[25] In the article of overconfidence and social signaling, the authors indicated that individuals can trigger overconfidence if they are not aware of their ability in the real world. In addition, overconfidence can be generated via exhibiting their distinct skills to others.[26]

Glaser and Weber (2007) pointed out that self-assertive investors are possibly better traders than logical traders. When facing an abundance of information on all kinds of sources, investors cannot judge whether it is reliable and useful, they often make decisions based on their past experience. Thus, they underestimate the risks they have to take[27] and cause the fluctuation of the return rate[28]. Yao and Lei (2016) also stated foregoing profits increase the chances of risky choices, antecedent losses increase the possibility of risky choices if the

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[22] Maarten CJ Van Rooij, Annamaria Lusardi, and Rob JM Alessie, "Financial Literacy, Retirement Planning and Household Wealth," *The Economic Journal* 122, no. 560 (2012).
[23] Michael M Pompian, "Using Behavioral Investor Types to Build Better Relationships with Your Clients," *Journal of Financial Planning* 21, no. 10 (2008).
[24] Roger G Clarke and Meir Statman, "The Djia Crossed 652,230," *The Journal of Portfolio Management* 26, no. 2 (2000).
[25] Terrance Odean, "Volume, Volatility, Price, and Profit When All Traders Are above Average," *The journal of finance* 53, no. 6 (1998).
[26] Stephen V Burks et al., "Overconfidence and Social Signalling," *Review of Economic Studies* 80, no. 3 (2013).
[27] Shin Lu Lin, "Overconfidence and Asymmetric Information," (2005).
[28] Tzu Peng Tseng, "A Study of Overconfidence or Underconfidence for Taiwan Stock Investors – an Example of Property Stocks," (2008).

investor expects an opportunity to disintegrate even. This could best describe why individuals deposit more money into the stock market when the prices are high and hold the shares when the prices are low. Liu (2006) also proved that overconfidence negatively affects returns to investment. Thereby, the performance of those overconfident and optimistic investors may be influenced accordingly. In addition, the danger of overconfidence is that it may lead to a minimal insight of risk because individuals that feel unquestionable about decision inputs may not realize the potential for massive losses incorporated with that choice.[29]

Individual investors with overconfidence think their knowledge and abilities are superior to others. They also believe they can select the best portfolio among the companies in the share market based on their accurate predicting skills. In addition, they are ambitious and determined which contributes to their active attitude to analyzing the information they received. This would positively improve their investment performance.

Loss Aversion

The concept was introduced by Kahneman and Tversky. It refers to losses significantly affect one's sentiments when comparing with gains. The effect of abandoning a valuable object is much greater than gaining the same object.[30] In other words, the damage caused by loss is greater than the joy brought by gain. Ricciardi (2008) indicated that loss aversion is quite different from latest portfolio theory, as a loss is usually presumed to be equal to a gain. His study also showed that individual investors tend to sell a winning investment rather than a loss investment. This is due to the pain of losing money is much

[29] Susan M Houghton et al., "No Safety in Numbers: Persistence of Biases and Their Effects on Team Risk Perception and Team Decision Making," *Group & Organization Management* 25, no. 4 (2000).
[30] Amos Tversky and Daniel Kahneman, "Loss Aversion in Riskless Choice: A Reference-Dependent Model," *The quarterly journal of economics* 106, no. 4 (1991).

worse than an equal earning. This statement is similar to the "disposition effect"[31]. This brings the underperformance for the investors with loss aversion.[32] There are always opportunities existing in the financial market. It relies on the investors to explore. However, loss aversion seems to take no notice of this situation.[33] When investors consider the risk is high in the financial market, they will not cast money into it. Investors incline to remain status quo as the suffering from losing money as mentioned above is even greater than the expecting to gain. For example, when the stock index is high, they would think the risk is high. At this moment, they would withdraw the money from the stock market. This leads them to miss the chance of making profits.

Representativeness

Investors are accustomed to the tendency of making conclusions because of their experiences of things they are familiar with by relating them with each other or can also presume the future through using available information.[34] Investors with representativeness might disregard relevant facts while making decisions. This might end in poor performance.

A financial study showed that investors with representativeness are likely to overact in the stock markets.[35] Overreaction is further explained.[36] After a sequence of good news, investors deeply believe that another piece of good news will follow. The consequence of optimism drives the investors to overweight the stock price. When the further information

[31] Hersh Shefrin and Meir Statman, "The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence," *The Journal of finance* 40, no. 3 (1985).
[32] Andriy Bodnaruk and Andrei Simonov, "Loss-Averse Preferences, Performance, and Career Success of Institutional Investors," *The Review of Financial Studies* 29, no. 11 (2016).
[33] Daniel Kahneman, Jack L Knetsch, and Richard H Thaler, "Experimental Tests of the Endowment Effect and the Coase Theorem," *Journal of political Economy* 98, no. 6 (1990).
[34] V Ricciardi and HK Simon, "Behavioral Finance: A New Perspective for Investors and Financial Professionals," *Retrieved from* (2001).
[35] Abdulaziz M Alwathainani, "Consistent Winners and Losers," *International Review of Economics & Finance* 21, no. 1 (2012).
[36] Ramzi Boussaidi, "Representativeness Heuristic, Investor Sentiment and Overreaction to Accounting Earnings: The Case of the Tunisian Stock Market," *Procedia-Social and Behavioral Sciences* 81 (2013).

comes out and does not meet their expectations, the stock price falls below their purchasing value causing them to lose money. Besides, investors make decisions based on a small portion of information, this would lead them to overvalue the information and make more mistakes. Moreover, the experience of success in the past will not necessarily lead to the success in the future. Investors with representativeness are likely to reduce their returns by making decisions based on stereotypes and past experience.

Price Anchoring

Price anchoring was defined as in a situation where there is pertinent value (an anchor), investors make evaluations according to it and it is revised to bring the closing answer.[37] Investors with this psychological factor always have a reference value in their minds. Generally, they use an initial piece of information to make judgements. The anchor might be in accordance with a statement or a number. Under this circumstance, "adjustments are typically insufficient[38]".

A research showed the illustration of anchoring by asking people two questions.[39] They found that people often use the primary information or a given number as anchor to measure the upcoming condition, which misleads them to make inappropriate judgments and choices. They also pointed out that investors with anchoring are likely to observe the financial market closely. They tend to stick with the initial data and do not change their mind easily, even the latest news is not consistent with the data. The anchor is also utilized to

[37] Amos Tversky and Daniel Kahneman, "Judgment under Uncertainty: Heuristics and Biases," *science* 185, no. 4157 (1974).
[38] Ibid.
[39] John S Hammond, Ralph L Keeney, and Howard Raiffa, "The Hidden Traps in Decision Making," *Harvard business review* 76, no. 5 (1998).

predict the price changes of the next year.[40] For the stock investors, the buy low sells high trading strategy helps them gain profits from the price difference.

Mental Accounting

The concept of the psyche accounting was first introduced by Richard Thaler in 1980, and later he developed the mental accounting. Mental accounting is a kind of psychological function adopted by people to manage, estimate, and monitor the operation of their assets.[41] With reference to the mental accounting theory, individual investors separate their account into categories, the current and future assets. Each account is segregated and cannot be shifted to other accounts. In a study in 2018, it divided mental account into three groups, current income, current assets and future income.[42] The study implied having more current assets helps individuals psychologically reduce the perception of the risks related to investments. This indicates that they spend money painlessly if they simply increased the wealth from unexpected ways, like winning games or lottery. Investors are likely to be impulsive and reckless with unexpected money. They might spend it without analyzing the market information.

[40] Isidore and Christie, "Review of Behavioral Biases-an Individual Equity Perspective."
[41] Richard H Thaler, "Mental Accounting Matters," *Journal of Behavioral decision making* 12, no. 3 (1999).
[42] William C Martin and Arezoo Davari, "Examining Financial Risk Tolerance Via Mental Accounting and the Behavioral Life-Cycle Hypothesis," *Academy of Marketing Studies Journal* 22, no. 4 (2018).

Research framework

The framework below is the hypothesis for each psychological factor affecting the investment performance. The five hypothesis had been listed below. Meanwhile, they had been carefully elaborated in the next section.

H1: Overconfidence positively affects investment performance.

H2: Loss aversion negatively affects investment performance.

H3: Representativeness negatively affects investment performance.

H4: Price anchoring positively affects investment performance.

H5: Mental accounting negatively affects investment performance.

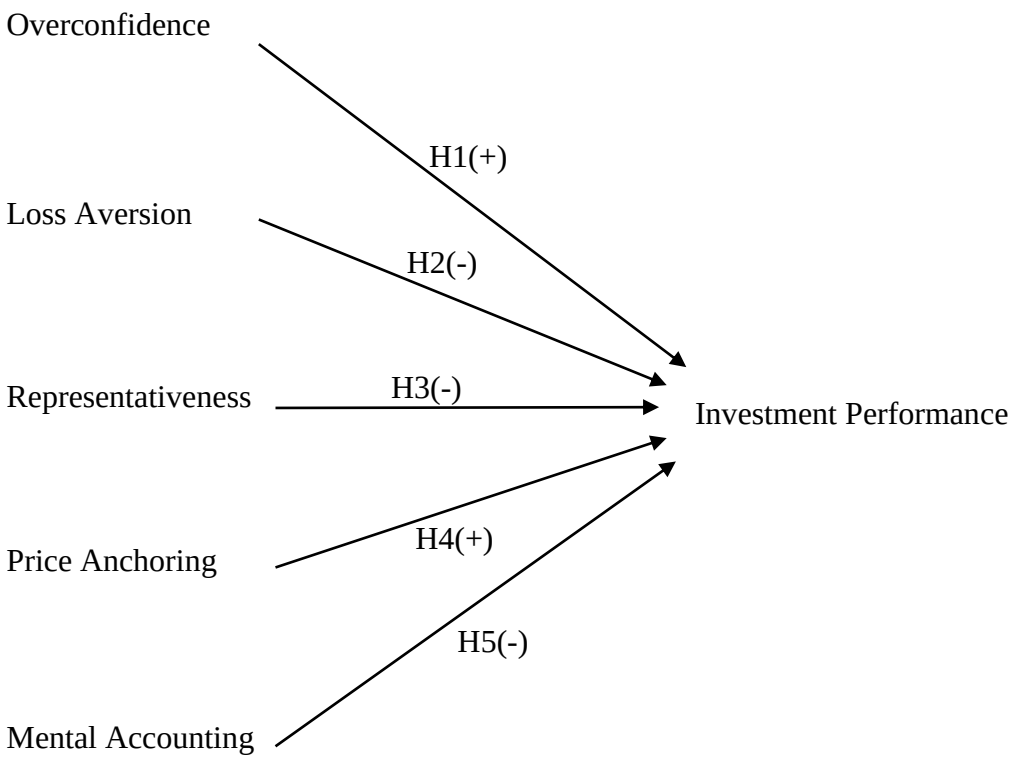

Figure 1. Research Framework

Research Hypothesis

A study pointed out the more confident the investor, the better the investment performance.[43] Individual investors with overconfidence think their knowledge and abilities are superior to others. They also believe they are intelligent, so their predictive skills are better than the other investors. In addition, they are ambitious so they active in analyzing the information they receive. They are willing to take the risks and buy stocks from the companies that they believe to have potentials. This could positively improve their investment performance. Therefore, hypothesis 1 is:

H1. Overconfidence positively affects investment performance.

Loss-averse investors tend to avoid loss. Losing money makes them feel painful psychologically. As a result, any undulation of the stock market would make them react to it instantly. When they consider the risk is high in the financial market, they will not cast money into it. Investors tend to stick to the status quo as the fright of losing is greater than the demand for gain. Consequently, they might choose not to buy the stocks from the emerging companies, as they may have no idea about the products or services the companies offered. This could indicate that it is risky to invest in these companies. High risk usually accompanies with high returns. Therefore, the hypothesis 2 is:

H2. Loss aversion negatively affects investment performance.

Investors are accustomed to the tendency of making conclusions because of their experiences of things they are familiar with by relating them with each other or can also

[43] Dimitrios Kourtidis, Željko Šević, and Prodromos Chatzoglou, "Investors' Trading Activity: A Behavioural Perspective and Empirical Results," *The Journal of Socio-Economics* 40, no. 5 (2011).

presume the future through using available information. Consequently, they might overvalue the possibility of something to happen and make more mistakes. The experience of success in the past does not necessarily lead to the success in the future. Investors invest money, according to what they think, based on the past experience which might lead to bad performance. Therefore, hypothesis 3 is:

H3. Representativeness negatively affects investment performance

Investors with price anchoring always have a reference value deep inside their minds. They usually use an initial piece of information as the reference value to make subsequent judgments. They believe that setting an anchor is the correct approach. When the prices meet their expectations, they sell the stocks. Once the prices go down to the anchor they set, they buy the stocks so they could gain profit from the price gap. Anchoring enables investors to select the alternative that is best for them. Therefore, hypothesis 4 is:

H4. Price anchoring positively affects investment performance.

Investors with mental accounting divided the money into categories. They use the money in accordance with where the money allocates. Money in different psychological accounts is often treated differently. Investors are more likely to be impulsive or reckless with unexpected money. For instance, if they win the extra money from lottery or other ways and invest money into the stock market, they might not pay much attention on the stocks they and might spend it without analyzing the market information. Also, capital should be utilized flexibly to increase the efficiency. Therefore, hypothesis 5 is:

H5. Mental accounting negatively affects investment performance.

METHODOLOGY

Research Design

This study has utilized quantitative method. The research aims to examine and analyze the relationship among certain psychological factors and investment performance. Therefore, it's important to gain information from investors, knowing how they behave in investment and how good their investment performance is. The questionnaire is based on these elements.

Data Collection

The instrument used for this research is questionnaire. The questionnaires were distributed to the different stock investors. The quantitative research takes two weeks for data collection. The questionnaires were delivered through the specialists from different agents and securities. They then distributed the questionnaire to individual investors. 150 copies were given, and there were 108 active respondents in the survey. The active responses were used to analyze and evaluate the factors that influence the stock investment.

Measures

The researcher employed the 7-point Likert scale to inquire respondents' opinions and attitudes toward stock investment. They assessed the extent to which they agree with the statements on independent variables. The 7 points on the scale are 1 to 7, which represent extremely disagree, disagree, slightly disagree, neutral, slightly agree, agree and extremely agree. The followings are the questions about independent variables and dependent variables, and the method of measuring the questions.

Independent Variables

(1) psychological factors:

The first segment of questionnaire can be divided into six sections testing investors' different behaviors in stock investment respectively, including overconfidence, loss aversion, representativeness, price anchoring, and mental accounting. The questionnaire was originated from a study.[44]

Scaled by 7-point Likert scale:

Psychological Factors	List of Questions
Overconfidence	➢ I am an experienced investor. ➢ I feel more confident in my own investment opinions over opinions of my colleagues or friends. ➢ I consult others (family, friends or colleges) before making stock purchase. ➢ I use my predictive skills to time the market and to make my portfolio performance higher than the market performance. ➢ I have stocks in more than one company. ➢ I have the ability to choose the stocks which its performance will be better than the market performance.
Loss Aversion	➢ I am more concerned about a large loss in my stock than missing a substantial gain. ➢ I feel nervous when large paper losses (price drops) have in my invested stocks. ➢ I will not increase my investment when the market performance is poor. ➢ When it comes to investment, no loss of capital (invested money) is more important than returns (profits). ➢ I sell stocks that increased in value very quickly. ➢ I keep stocks that decreased in value for long time.
Representativeness	➢ I tried to avoid investment in companies with a history of poor earnings. ➢ I rely on past performance to buy stocks because I believe that good performance will continue. ➢ Good stocks are firms with past consistent earnings growth. ➢ I buy hot stocks and avoid stocks that performed poorly in the near past.
Price Anchoring	➢ I compare the current stock prices with their recent year high and low price to justify my stock purchase. ➢ I am likely to sell my stock after the price hits recent year high ➢ I am unlikely to buy a stock if it was more expensive than last year ➢ I see the stock price as high if the price has increased to the current year high ➢ I believe that the position of the year high and low price determined the current stock price movement range. ➢ I use the stock purchase price as a reference point for trade.
Mental Accounting	➢ I tend to treat each element of my investment portfolio separately ➢ I hesitate selling stocks that had high returns in the past even though their prices decrease nowadays ➢ I don't care about the performance of my investment portfolio as a whole but I care about the return of each account separately

[44] Sahar Mohammed Abu Nada, "Behavioral Factors Influencing Investment Decision Making: An Empirical Study of Palestine Stock Exchange," *Behavioral factors influencing investment decision making: An empirical study of Palestine stock exchange* (2013).

Dependent variable

Investment performance:

The fifth segment is about the return ratio over one month to the years they invest. The measurement of investment performance was cited from a study.[45]

Scaled from 1-20 points from low ratio to high ratio:

Dependent Variable	List of Questions
Investment Performance	➢1. In the past month, what is the approximate monthly rate of return on your investment in stocks? □0%~5% □6%~10% □11%~20% □21%~30% □31%~40% □41%~50% □51%~60% □61%~70% □71%~80% □More than 81% □0%~ -5% □-6%~ -10% □-11%~ -20%□-21%~ -30% □-31%~ -40% □-41%~ -50% □-51%~-60% □-61%~ -70%□-71%~ -80% □-81% or less ➢2. In the past year, what is the approximate annual rate of return on investment in stocks? □0%~5% □6%~10% □11%~20% □21%~30% □31%~40% □41%~50% □51%~60% □61%~70% □71%~80% □More than 81% □0%~ -5% □-6%~ -10% □-11%~ -20%□-21%~ -30% □-31%~ -40% □-41%~ -50% □-51%~-60% □-61%~ -70%□-71%~ -80% □-81% or less ➢3. Since you started investing in stocks, what is the total return on investment in stocks so far? □0%~5% □6%~10% □11%~20% □21%~30% □31%~40% □41%~50% □51%~60% □61%~70% □71%~80% □More than 81% □0%~ -5% □-6%~ -10% □-11%~ -20%□-21%~ -30% □-31%~ -40% □-41%~ -50% □-51%~-60% □-61%~ -70%□-71%~ -80% □-81% or less ➢4. In the past year, what is the approximate average amount of return for investing in stocks? □$0 ~ 50,000 □$50,001 ~ 100,000 □$100,001 ~ 150,000 □$150,001 ~ 200,000 □$200,001 ~ 250,000 □$250,001 ~ 300,000 □$300,000 or more □$0 ~- 50,000 □$-50,001~ -100,000 □$-100,001~ -150,000 □$-150,001 ~- 200,000 □$-200,001~ -250,000 □$-250,001~ -300,000 □$-300,000 or more ➢5. In the past three years, what is the approximate average return on investment in stocks? □$0 ~ 50,000 □$50,001 ~ 100,000 □$100,001 ~ 150,000 □$150,001 ~ 200,000 □$200,001 ~ 250,000 □$250,001 ~ 300,000 □$300,000 or more □$0 ~- 50,000 □$-50,001~ -100,000 □$-100,001~ -150,000 □$-150,001 ~- 200,000 □$-200,001~ -250,000 □$-250,001~ -300,000 □$-300,000 or more

[45] Chao-Hsiang Lien, "公開推薦資訊與投資者人格特質對其操作策略和投資績效影響之研究," (2003).

DATA ANALYSIS

Descriptive Information

This study uses the quantitative analysis. 108 questionnaires were collected. They are processed and analyzed by prevalent SPSS system.

Among the respondents, female takes up 60.2% while male accounts for 39.8%. The most percentage of them is at the age of 51-55, which is 20.4%. As to the occupation, they mainly work in the financial industry (29.6%). The total asset they can allocate in the stock market from five hundred thousand to one million dollar accounts for 56.5%. The greater part of them has more than eleven years in investment, which take up 37%.

Reliability Analysis

In order to identify whether the data is reliable, Cronbach's Alpha is used to measure it (α >0.7, highly reliable). It can be seen from Table (1) that the Cronbach's Alpha for the four categories which composed of 8 parts, namely overconfidence, loss aversion, representativeness, price anchoring, mental accounting and investment performance are 0.822, 0.804, 0.711, 0.757, 0.822, and 0.910 respectively. All the values of Cronbach' Alpha are greater than 0.7. Therefore, the results of reliability analysis confirmed that consistency is at an acceptable level for each category for each part is higher than 0.7, which means that the reliability of each section is acceptable.

Table 1. Results for Reliability Analysis

Variables	No. of item	Cronbach's Alpha
Overconfidence	6	0.822
Loss Aversion	5	0.804
Representativeness	4	0.711
Price anchoring	6	0.757
Mental Accounting	3	0.822
Investment Performance	5	0.910

Table 2. Pearson Correlation Analysis

Means, Standard Deviation and Correlation (N=108)

Variables	Mean	S.D.	1	2	3	4	5
Overconfidence	4.0201	1.05747					
Loss aversion	4.7852	1.10045	-0.411**				
Representativeness	5.2708	0.84702	-0.176	0.350			
Price anchoring	4.6651	0.84631	0.727**	-0.413**	-0.079		
Mental accounting	4.6235	1.26384	-0.350**	0.403**	0.460**	-0.331**	
Investment performance	8.9537	1.95206	0.664**	-0.571**	-0.351**	0.710**	-0.521**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Multiple Linear Regression

Table 3. Linear Regression Analysis

Standardized Regression Coefficient from Analyses Predicting Investment Performance (N=108)	
Independent Variables	Model 1
Overconfidence	0.192*
Loss aversion	-0.203**
Representativeness	-0.134*
Price anchoring	0.420***
Mental accounting	-0.172*
Model F	42.888
R^2	0.678
Adjusted R^2	0.662

P<0.05*, P<0.01**, P<0.001***

Hypothesis 1: Overconfidence positively affects investment performance.

As can be seen in table 2 and 3, overconfidence has a positive influence on investment performance (β =0.192, p<0.05). The result is consistent with the hypothesis one. The more confident the investors, the better the investment performance. Investors with overconfidence may be better in predicting the future and avoiding the potential risk than other investors It also indicates the investors with overconfidence can anticipate the trend of the stock market and make an accurate choice. This leads to a great investment performance.

Hypothesis 2: Loss aversion negatively affects investment performance.

Table 3 shows that loss aversion has a negative effect on investment performance. Hypothesis 2 is supported by the results (β = -0.203, p<0.01). It can be interpreted that the retail investors are afraid of losing money, so the reluctance of selling devalued stocks or buying risky stocks with potential causes them to lose more money.

Hypothesis 3: Representativeness negatively affects investment performance.

As can be seen from table 3, representativeness negatively affects investment performance. Hypothesis 3 is supported (β = -0.134, p<0.05). Investors make decisions based on their experiences of things they are familiar with by relating them with each other. They might disregard relevant facts and overestimate the similarity of things. This could lead to poor investment performance.

Hypothesis 4: Price anchoring positively affects investment performance.

From table 3, Hypothesis 4 is supported (β = 0.420; p<0.001). Price anchoring has a positive effect on the investment performance. The buy low sells high strategy has worked well and helped the investors to make money from the stock market. Hence, setting an anchor to gain the expected profit and diminish the loss is a correct approach.

Hypothesis 5: Mental accounting negatively affects investment performance

According to table 3 (β = -0.172; p<0.05), the results are consistent with hypothesis 5. Mental accounting has a negative effect on the investment performance. When investors psychologically separate money into groups, it can have a negative effect on their finance. They might keep too much money in the emergency account instead of the investment

account. Besides, they do not care too much about the extra money from winning games or other ways. These could harm their investment performance.

Research Results

In summary, from Table 2 and 3, overconfidence positively affects investment performance (β=0.192, $p<0.05$). H1 is supported. Table 3 shows that loss aversion negatively affects investment performance. H2 is supported (β= -0.203, $p<0.01$). From Table 3, representativeness negatively affects investment performance. H3 is supported (β= -0.134, $p<0.05$). From Table 3, H4 is supported (β= 0.420; $p<0.001$). Price anchoring positively affects investment performance. According to Table 3 (β= -0.172; $p<0.05$), H5 is supported. Mental accounting negatively affects investment performance.

Table 4. Research Results

Number	Hypotheses	Results
H1	Overconfidence positively affects investment performance.	Supported
H2	Loss aversion negatively affects investment performance.	Supported
H3	Representativeness negatively affects investment performance.	Supported
H4	Price anchoring positively affects investment performance.	Supported
H5	Mental accounting negatively affects investment performance.	Supported

Discussion

In general, people are assumed to be rational and could analyze all the accessible information. However, Individual investors exhibit their irrationality arbitrarily in the market. Thus, the psychological factors influence the investment performance.[46]

The first hypothesis is that overconfidence positively affects investment performance. This could indicate that investors with overconfidence could own advanced knowledge. They can accurately predict the trend of the stock market. Second hypothesis is that loss aversion negatively affects investment performance. The fear of losing money causes them to hesitate to buy the stocks from emerging or promising companies. The tendency of loss aversion causes the individual investors to reduce their returns. The results are consistent with hypothesis two. Third hypothesis is that representativeness negatively affects investment performance. Investors who rely on the information on the firms' past performance are prone to overreact to investment. According to Ramzi Boussaidi, overreaction can cause the investors to overvalue the companies' stock price. The investors with the tendency of representativeness tend to make wrong decisions. The wrong decisions lead to a decrease in returns. By analyzing the data, the results are consistent with hypothesis three. Fourth hypothesis is that price anchoring positively affects investment performance. There was a huge drop in the stock market around February due to the coronavirus. The investors might use it as an anchor and decide to buy or sell. The general trends of the stock market have appeared to recover since then. Thus, the anchoring effect leads to an increase in returns. Fifth hypothesis is that mental accounting negatively affects investment performance. The psychological categorization of finance causes the investors not being able to use the money

[46] Menike, Dunusinghe, and Ranasinghe, "Behavioural Factors Influence on Investment Performance: A Survey of Individual Investors at Colombo Stock Exchange."

flexibly and rationally. This could lessen the returns. The results are consistent with the hypothesis five.

CONCLUSION

The study aimed to highlight the relationship between psychological factors and investment performance in the stock market. It can be seen from the results that overconfidence and price anchoring positively influence the investment performance. On the other hand, loss aversion, representativeness, and mental accounting negatively affect the investment performance.

Psychological factors influence investors' performance in stock markets with no doubt, but not all of them are harmful. The characteristics of overconfidence might be energetic, optimistic, skillful, and knowledgeable. In this study, investors with these characteristics could be confident about their outstanding abilities in predicting the uncertain stock market, and made profitable choices. The characteristics of price anchoring might be persistent and targeted. Investors with price anchoring had clear goals and know what they pursued. They took advantage of the price differences and made money. With these two psychological antecedents, the investors performed better than the other three factors of this research.

Worry and risk aversion might be the characteristics of loss aversion. Loss-averse Investors had a habit of purchasing stocks with less risk. Thus, they missed the chances of purchasing the stocks with potential and ended in poor performance. Investors with representativeness were psychologically used to judging the values of the companies by their past performance. This misled them to buy the stocks with low returns. Investors with mental accounting were not flexible enough to use their capital efficiently. Consequently, the performance was unsatisfied.

Investment is the best strategy for financial management. However, it is hard to earn money from the stock market if the investors have psychological biases and do not know how

to improve them. In order to succeed, individual investors should overcome the psychological shortcomings, develop and make good use of their strengths. Moreover, individual investors might also need to learn how to control their emotion and when to sell the stocks.

APPENDIX A

QUESTIONNAIRE

您好:

感謝您撥冗填答此份問卷。這是一份研究人格特質、心理因素、知覺風險、投資策略與投資績效的問卷。您所提供的資料僅供學術研究之用，敬請放心填答。

您的寶貴資料對本研究具有決定性的幫助，在此感謝您的支持與協助。

敬祝

心想事成

文藻外語大學 國際事務系
指導教授: 吳 紹 慈 博士
學　　生: 劉 宸 媛 敬上

人格特質	非常不同意	不同意	稍微不同意	中立	稍微同意	同意	非常同意
1. 當我做計劃時, 我就確信能夠付諸實現							
2. 當厄運降臨時, 我總是無法保護個人利益							
3. 我能如願以償, 多半是因為我有較好的機運							
4. 縱使我有能力, 但若不求助於有權勢的人, 我也不會被委以領導重責							
5. 我的一生主要被有權勢的人所左右							
6. 我開車是否會發生事故, 主要看運氣							
7. 我覺得計劃做得太遠是沒有必要的, 許多事情全靠運氣的好壞.							
8. 我必須取悅我的上司, 才能達到我的目的							
9. 我有相當把握能夠決定我生活中所將發生事							
10. 通常我總是能夠保護自己的利益							
11. 為了實行我的計劃, 我必須使這個計劃能夠迎合上司或權勢高於我的人							
12. 我的一生主要操控在我自己手中							

心理因素	非常不同意	不同意	稍微不同意	中立	稍微同意	同意	非常同意
第一部分							
1. 我是一個經驗豐富的投資者							
2. 我對自己的投資見解比同事或朋友的見解更有信心							
3. 購買股票之前，我會諮詢其他人（家人，朋友或大學）							
4. 我用我的預測能力來把握市場時機並建立自己的投資組合表現高於市場表現							
5. 我擁有多家公司的股票							
6. 我有能力選擇表現優於市場表現的股票							
第二部分							
7. 比起可觀收益，我比較在乎自己股票的巨大虧損							
8. 當我的投資股票出現巨額賬面虧損（價格下跌）時，我會感到緊張							
9. 市場表現不佳時，我不會增加投資							
10. 在投資方面，沒有資本（投資資金）的損失比收益（利潤）更重要							
11. 我賣出增值很快的股票							
12. 我保留長期下跌的股票							
第三部份							
13. 我避免對那些盈利不佳的公司進行投資							
14. 我依靠過去的表現來購買股票，因為我相信良好的表現將會持續							
15. 好的股票是過去收益持續增長的公司							
16. 我購買熱門股票，並避免近期表現不佳的股票。							

第四部分							
	非常不同意	不同意	稍微不同意	中立	稍微同意	同意	非常同意
17. 我將當前股票價格與最近一年的最高價和最低價比較，作為我購買股票的參考							
18. 創下近年新高後，我可能會出售我的股票							
19. 如果股票比去年貴，我不太可能買進							
20. 如果股價升至當年的高點，我認為股價會很高							
21. 我相信一年中高低價位的位置決定了當前股價的波動範圍。							
22. 我將股票購買價格用作股票買賣交易的參考點。							
第五部分							
23. 如果我從一位朋友那裡聽說過某支股票獲得了高額回報，那我會去買。							
24. 如果我想投資某家公司的股票，我將依賴我同事的意見							
25. 如果我想投資某家公司的股票，我將依賴網路信息							
26. 如果我想投資某家公司的股票，我將依賴來自同一公司的消息							
27. 如果我想投資某家公司的股票，我將依賴金融專家所給的消息							
28. 如果有朋友建議我購買某些公司的股票，那麼有關該股票價格上漲的可能性的消息傳給我，我將投資這些股票							
第六部分							
29. 我傾向於分別分析我投資組合中的每檔股票							
30. 我若要賣出過去收益高的股票，我會感到猶豫即使該股目前股價下跌							
31. 我只在乎個股的收益，不在乎投資組合的整體績效							

知覺風險	非常不同意	不同意	稍微不同意	中立	稍微同意	同意	非常同意
1. 我覺得投資股票並非明智之舉							
2. 我覺得投資股票會造成財務壓力。							
3. 我覺得投資股票會造成投資虧損							
4. 我擔心投資的股票績效不如預期							
5. 我擔心投資的股票績效比同類型的股票差							
6. 我擔心投資的股票績效不如介紹的那麼好							
7. 我覺得投資股票必須花時間收集資訊							
8. 我覺得投資股票必須花很長的時間，才能達到我的預期報酬率							
9. 我覺得投資股票必須隨時花時間去注意該股票走勢							

投資策略	0	1%～20%	21%～40%	41%～60%	61%～80%	81%～100%
1. 長期投資(一年以上)，此策略佔投資資金比例						
2. 中期交易(三個月至一年)，此策略佔投資資金比例						
3. 短期交易(三個月以內)，此策略佔投資資金比例						

投資報酬率:

1. 您近一個月來，投資股票的月投資報酬率大約為何?

□0%～5% □6%～10% □11%～20% □21%～30% □31%～40%
□41%～50% □51%～60% □61%～70% □71%～80% □81%以上
□0%～ -5% □-6%～ -10% □-11%～ -20% □-21%～ -30% □-31%～ -40%
□-41%～ -50% □-51%～ -60% □-61%～ -70% □-71%～ -80% □-81%以下

2. 您近一年來，投資股票的年投資報酬率大約為何?

□0%～5% □6%～10% □11%～20% □21%～30% □31%～40%
□41%～50% □51%～60% □61%～70% □71%～80% □81%以上
□0%～ -5% □-6%～ -10% □-11%～ -20% □-21%～ -30% □-31%～ -40%
□-41%～ -50% □-51%～ -60% □-61%～ -70% □-71%～ -80% □-81%以下

3. 您從開始投資股票來，至今投資股票的總投資報酬率大約為何?

□0%～5% □6%～10% □11%～20% □21%～30% □31%～40%
□41%～50% □51%～60% □61%～70% □71%～80% □81%以上
□0%～ -5% □-6%～ -10% □-11%～ -20% □-21%～ -30% □-31%～ -40%
□-41%～ -50% □-51%～ -60% □-61%～ -70% □-71%～ -80% □-81%以下

4. 你近一年來, 投資股票的平均報酬金額大約為何?

□ 0 ～ 50,000 元 □50,001 ～ 100,000 元 □100,001 ～ 150,000 元
□150,001 ～ 200,000 元 □200,001～ 250,000 元 □250,001 ～ 300,000 元
□300,000 元以上
□ 0 ～ -50,000 元 □-50,001 ～ -100,000 元 □-100,001 ～ -150,000 元
□-150,001 ～ -200,000 元 □-200,001～ -250,000 元 □-250,001 ～ -300,000 元
□-300,000 元以上

5. 你近三年來, 投資股票的平均報酬金額大約為何?

□ 0 ～ 50,000 元 □50,001 ～ 100,000 元 □100,001 ～ 150,000 元
□150,001 ～ 200,000 元 □200,001～ 250,000 元 □250,001 ～ 300,000 元
□300,000 元以上
□ 0 ～ -50,000 元 □-50,001 ～ -100,000 元 □-100,001 ～ -150,000 元
□-150,001 ～ -200,000 元 □-200,001～ -250,000 元 □-250,001 ～ -300,000 元
□-300,000 元以上

基本資料：

一、姓 別：□1.男 □2.女

二、年 齡：□ 20 歲以下 □ 21~25 歲 □ 26~30 歲 □ 31~35 歲
□ 36~40 歲 □ 41~45 歲 □ 46~50 歲 □ 51~55 歲
□ 56~60 歲 □ 60 歲以上

三、職 業：□1.自行創業 □2.學生/家管/退休
□3.軍公教 □4.醫療生技
□5.金融保險 □6.資訊電子
□7.傳統製造 □8.休閒產業
□9.其他

四、教育程度：□1.國小 □2.國中 □3.高中職 □4.專科/大學 □5.研究所以上

五、您可支配的總資產（台幣）：

□1. 50 萬以下 □2. 50～100 萬 □3. 100～150 萬
□4. 150～200 萬 □5. 200 萬以上

六、您的投資經驗:

□1. 1 年以下 □2. 1 至 5 年 □3. 6 至 10 年 □4. 11 年以上

◆ 問卷到此全部結束，感謝您的填答 ◆

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