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# The Correlation between Investor Anxiety, Preference, and Investment Performance Based on Risks of Investment

Xiao-Qing LI<sup>1</sup>, Xin-Tian Zhuang<sup>2</sup>, Xiao-Wei ZHUANG<sup>3</sup>

## Abstract

There is no expert in the market, but merely winners and losers. Every one intends to make money, while it is not easy to make money in the financial market. From the long-term experience in the entire market, merely few people could take money home, but most people put money in the market without returns. No matter how much a person refine the skills, enhance the knowledge or search for more price-related information, the presented operation performance cannot achieve the expectation. Different from general investors, winners in the market do not study various economic data or make predictions but present graceful attitudes. How do winners think? By discussing investors' psychology, this study intends to discuss the effect of investor anxiety on risks of investment, preference, and investment performance. With experimental design, 360 students of department of finance in universities in Liaoning are proceeded the virtual investment contest. The research results reveal significant effects of investor anxiety on 1.risks of investment, 2.preference, and 3.investment performance. According to the results, suggestions are proposed, expecting to help investors effectively enhance investment performance in the financial market.

*Keywords:* investor anxiety, risks of investment, preference, investment performance

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## Introduction

In past two decades, behavioral finance is one of the theories for the rapid growth of commerce and economy. It proposes questioning on traditional finance, studies investor behaviors with rational expectation in the research fields of traditional economics and financial management, and regards investors being rational. To explain the factors in human behaviors with rationality, the conceptual model of the theory is the important reference behind microeconomics. Except economics, rational choice theory is a primary research method in politics and sociology. Nonetheless, the violation of traditional pricing theory is gradually discovered in the market. The increasing “anomaly” is questioning traditional finance theory. Psychologists attempt to discuss investor behaviors with psychology and explain market anomalies with personal psychology or personality traits that anomalies appear correlations with investment performance

The major thought of behavioral finance theory lies in investors, when making investment decisions, being easily interfered and influenced by psychological factors to result in wrong investment judgment and appear over-reaction or under-reaction. When selecting stocks by grasping or utilizing general investors’ psychological and behavioral characteristics, the profit making opportunities can be expected. Similar to price ups/downs of products, stock price ups/downs are determined by the supply-demand relationship in the market, and the factors in stock prices contain general market factor, industry factor, company factor, and psychological factor. According to the changes of stock markets in various countries, it is realized that pure economic factors could not explain the situation. In face of stock price ups/downs, investors’ psychological reaction and choice of trading strategies for investment could be discussed. For this reason, the effect of investor anxiety on risks of investment, preference, and investment performance is discussed in this study, expecting to help investors effectively enhance investment performance in the financial market.

## Literature review

### *Anxiety*

Li (2014) mentioned that people would make decision based on the expectation or assumption of future. Such assumptions or opinions were easily affected by emotion at the time, even though such emotion had nothing to do with the decision-making problems. Jacobsen *et al.* (2014) stated that investor bias could basically be divided into cognitive bias and emotional bias, where emotional bias contained addiction, endowment effect, negative, greedy, fear, loss aversion, magical thinking, optimistic bias, overconfidence, arrogance, regret, and status quo bias. Emotional bias would strengthen the effect on investment decision judgment

(Fama & French, 2015). Abu Bakar, Siganos, & Vagenas-Nanos (2014) classified emotion into anger, fear, sorrow, happiness, disgust, and surprise. Krigman & Jeffus (2016) regarded emotion as the reaction resulted from certain affairs, and both greedy and fear were extreme emotion. When making decisions, investors would not merely appear greedy and fear, anxiety was another kind of emotion reaction in the middle. Both greedy and fear would induce anxiety. Most investors therefore were at anxiety state. According to the properties, anxiety could be divided into “trait anxiety” and “situational anxiety”. The former was one of personality traits with permanence; the latter, on the other hand, was induced by distinct situations that it was a kind of temporary reaction. Anxiety was also an emotional reaction. However, a person with anxiety could not precisely describe the entire condition, but simply paid attention to the physical feeling. Lowies, Hall, & Cloete (2016) regarded anxiety as the result of repressing the instinct drive as well as bad self-control of unconscious motive; it was an unpleasant nervous state and the reaction to cope with risks when an individual consciously or subconsciously perceive the occurrence of a terrible thing. Coakley *et al.* (2014) indicated that an individual would appear anxiety on the behaviors when expecting or actually receiving disagreement signals from one or several interested parties. Yalcin (2016) explained anxiety as the disturbed and nervous state, generated from personal self-concept inconsistent with real experience.

Referring to Chan, Chang, & Hsu (2016), State Anxiety Inventory and Trait Anxiety Inventory in STAI are applied to this study, where the former is used for measuring the score acquired in the investment simulation contest as the degree of anxiety.

### ***Risks of investment***

Yang & Zhou (2015) stated that value at risk was merely a number or an amount, mainly to quantify risks. Copur (2015) mentioned that risks were first measured by variance proposed by Markowitz, who considered trade-off existing in risks and returns; the higher requirement for returns would encounter the larger risk, but investors' decision principle was to acquire the maximum returns under the minimum risks. Labidia & Yaakoubi (2016) argued that such measurement of risks was relatively abstract for general investors to clearly understand risks; however, the value at risk provided a definite value. Kansal & Singh (2015) referred value at risk as the maximum possible loss under established confidence level during specific possession of portfolio, under the specific probability distribution with product price change. Bukovina (2016) defined value at risk as “the maximum expected loss in specific period under given confidence level”; such maximum expected loss was the value at risk. Risks of investment depended on an investor's risk aversion tendency, which referred to individual risk preference. Graham, Hale, & Gaffney (2014) indicated that each investor had personal investment preference;

when there were risks, an individual chose to undertake risks or escape from risks, i.e. “each person showing distinct intention to take a chance”.

Zhang & Zheng (2015) defined risk as “uncertainty of rate of return”; in other words, the past rate of return standard deviation was used as the estimate of expected risk, which was called “volatility”. Referring to Liew & Wang (2016), “rate of return standard deviation” is used as the operational definition of risks of investment. To calculate the standard deviation during the contest with each participant’s daily rate of return, the calculated value is the participant’s risks of investment.

### ***Preference***

Lillo *et al.* (2015) indicated that those being able to survive and make profits in the financial market were ones with strong stop loss without realized profit preference. Such irrational-like behaviors might be the effect of natural altruistic value or purposively cultivated reverse trading discipline (through rational analyses and observation to make trading habits symmetric to irrational crowds) through the observation of most investors’ irrational behaviors in the market to eventually achieve the objective of success. Komariah, Mahbub, & Sin (2015) regarded preference as the emotion and tendency hid in human mind which was non-intuitive and the perceptual factors in preference were more than rational factors. Preference presented obvious individual differences and showed group characteristics. In the microeconomics value theory, Castaldo *et al.* (2015) pointed out preference as a relatively subjective idea on value that consumers arrange the product combination with personal intention. Corea (2015) referred preference, in psychology, as individual attitudes towards making decision on object performance. Hamid & Heiden (2015) indicated that preference was often defined, in psychology, as individual judgment on liking an object. In financial trading, investors often encountered the situations of profit realization, stop loss expansion (risk control), ratio of invested capitals or gearing ratio, and preference for trading with effects on the investment benefits.

Referring to the preference for trading logic, proposed by Zhang *et al.* (2016), as the research items, including realized profit preference (RP), don’t stop loss preference (DSL), and capital leverage preference (CL). Ones with realized profit preference are in favor of immediate profit realization or not in favor of continuous profit realization. Those with don’t stop loss preference prefer the state with continuous loss or stand the state of loss. Investors with capital leverage preference prefer high-risk trading or are not in favor of low-risk trading.

### ***Investment performance***

Liu *et al.* (2015) stated that performance, often used by managers, was the indicator to measure performance, rather than the represented meaning. Da, Gurun, & Warachka (2014) defined performance as the measurement of the attainment of organizational goal, which was based on facts, i.e. outputs from resources invested. Chen *et al.* (2014) defined performance as “all behaviors related to organizational goals and such behaviors could be measured according to individual contribution to organizational goals”. In organizational behavior, performance referred to the overall performance of efficiency, effectiveness, and efficacy (Heston & Sinha, 2017). Zhang & Zheng (2015) pointed out performance as the effect achieved after completing an event, i.e. the attainment of goals. Performance was also the measurement of the attainment of organizational goal based on facts, i.e. outputs from resources invested. Huang & Chan (2014) explained investment performance as the loss or profit acquired from the investment in an object. Referring to Chang, Solomon & Westerfield (2016), rate of investment return is regarded as the measurement standard of investment performance.

### ***Research hypothesis***

Krigman & Jeffus (2016) revealed that domestic listed companies, when proceeding major investment pronouncement, would appear significantly positive abnormal returns on the day of pronouncement, showing the positive information effect of major investment pronouncement. Such an effect would be completed within one or two days, without any delay. It supported the assumption of the stock market in Taiwan with semi-strong form efficiency. Aiming at distinct investment pronouncement, major investment pronouncement presented positive information effect, while the reaction would be different. Investors should carefully select the investment preferred by the investment mass and the optimal investment timing (Labidia & Yaakoubi, 2016). Hillert, Jacobs, & Muller (2014) discovered that the sample combination at various phases would appear “the stronger being the winner and the weaker being the loser”, tending to the expectation of momentum strategy. Lowies, Hall, & Cloete (2016) mentioned that investors overemphasizing short-term information but ignoring long-term basic information would result in “over-reaction” of stock prices and temporarily deviate from basic value, which was then reversely revised to return reasonable prices. It revealed that major political and military events showed over-reaction tendency on the overall stock market. Anxious ones would regard investment environment as external risks and threats and, in order to avert risks, would select low-risks of investment to reduce anxiety. Besides, they regarded the tendency of stock market as opportunities or threats to follow rising stocks and get rid of falling stocks. It therefore affected the decisions on risks of investment and trading strategies (Chan, Chang, & Hsu 2016). The following hypothesis is therefore proposed in this study.

H1: *Investor anxiety shows notably effects on risks of investment.*

Lou (2014) indicated that daily behaviors and actions would gradually cultivate various habits, which were slowly accumulated to form preference personality; once preference personality was formed, people would follow the habits and gradually determine the fate. Komariah, Mahbub, & Sin (2015) considered that fate was determined by preference, preference was formed by habits, and habits were in daily behaviors and actions. Lillo *et al.* (2015) mentioned that the multiple personalities of investors would result in unpredictable prices in the trading; especially, the fear of uncertain risks would accompany the desire of future profits that traders would be confused and anxious due to the changes of market prices and information from different channels. To survive in the changeable market and acquire returns, investors' confusion and anxiety would affect trading preference (value) (Zhang *et al.*, 2016). The following hypothesis is therefore proposed in this study.

H2: *Investor anxiety reveals remarkable effects on preference.*

Liu *et al.* (2015) discovered that, on the day of M&A pronouncement, a company with successful merger and acquisition would present information effect on stock prices. On the day of M&A confirmation, the company with successful merger and acquisition would appear remarkable information effect on stock prices. It might be because the new company did not show expected internal integration after the success of M&A, or even worse, that investors worried about the reduction of stock value and sold the stocks to result in falling stock prices. Zhang & Zheng (2015) pointed out the positive effects of returns and risks in the portfolio theory in traditional finance. It was necessary to undertake higher risks in order to acquire larger returns (Heston & Sinha, 2017). Chang, Solomon, & Westerfield (2016) discussed the effects of investors' personality traits and investment behavior on the investment performance and revealed that more active, confident, and positive investors stressing on information collection and undertaking pressure in the decision making would present higher investment performance; those who would undertake high risks showed large opportunities on acquiring high returns; and, ones applying portfolio strategies could acquire higher investment performance by reducing risks. Accordingly, the following hypothesis is proposed in this study.

H3: *Investor anxiety appears significant effects on investment performance.*

## **Research method**

### ***Measurement of research variable***

*Risks of investment.* Referring to Liew & Wang (2016), “standard deviation of rate of return” is regarded as the operational definition of risks of investment in this study. The daily rate of return of each participant is used for calculating the standard deviation during the contest, and the calculated value is the risks of investment of the participant.

*Preference.* Referring to Zhang *et al.* (2016), the trading logic of realized profit preference (RP), don't stop loss preference (DSL), and capital leverage preference (CL) is used as the research items.

*Investment performance.* Referring to Chang, Solomon, & Westerfield (2016), rate of investment return is utilized as the measuring standard of the participant's investment performance.

### ***Research object and research design***

To effectively achieve the research objective and test the research hypotheses, experimental design is applied to study 360 students of department of finance of universities in Liaoning for the virtual investment contest.

### ***Analysis method***

Analysis of Variance is utilized for the effect of investor anxiety on risks of investment, preference, and investment performance in the virtual investment contest.

## **Results and discussions**

### ***Effects of investor anxiety on risks of investment, preference, and investment performance***

(1) Variance analysis of investor anxiety on risks of investment. Analysis of Variance is applied to discuss the difference of investor anxiety in risks of investment. From Table 1, investor anxiety shows notable differences on risks of investment, investors' low anxiety is higher than the high anxiety on risks of investment. H1 is therefore supported.

Table 1. Variance analysis of investor anxiety on risks of investment

Variable	F	P	Scheffe post-hoc
Investor anxiety	13.25	0.000*	Low Anxiety>High Anxiety

\* stands for  $p < 0.05$

(2) *Variance analysis of investor anxiety on preference.* Applying Analysis of Variance to discuss the difference of investor anxiety in preference, Table 2 shows significant differences of investor anxiety on realized profit preference, and investors' high anxiety is higher than the low anxiety on realized profit preference; investors' low anxiety is higher than the high anxiety on don't stop loss preference; and, investors' low anxiety is higher than the high anxiety on capital leverage preference. H2 is therefore supported.

Table 2. Variance analysis of investor anxiety on preference

Variable	F	P	Scheffe post-hoc
Investor anxiety Realized profit preference	16.33	0.000*	high anxiety>low anxiety
Investor anxiety Don't stop loss preference	22.45	0.000*	low anxiety>high anxiety
Investor anxiety Capital leverage preference	20.16	0.000*	low anxiety>high anxiety

\* stands for  $p < 0.05$

(3) *Variance analysis of investor anxiety on investment performance.* Using Analysis of Variance for discussing the difference of investor anxiety in investment performance, Table 3 reveals remarkable difference of investor anxiety on investment performance. Investors' low anxiety is higher than the high anxiety on investment performance that H3 is supported.

Table 3. Variance analysis of investor anxiety on investment performance

Variable	F	P	Scheffe post-hoc
Investor anxiety	33.72	0.000*	low anxiety>high anxiety

\* stands for  $p < 0.05$

## Conclusion

The research results prove that those with high anxiety tend to low investment risks, and investor anxiety presents remarkable effects on risks of investment in the investment. When proceeding investment, investors would appear nervous or fearful emotion due to market ups/downs. The induced anxiety would influence the choice of risks of investment to tend to lower risks of investment and verify the effect of anxiety on preference. This study verifies the following state that general investors, who are inexperienced and cannot resist the temptation of profits, would actively buy in when stock prices going up. At the time, they are greedy and expect the stock prices continuously go up. When the stock prices fall, they would lose the judgment and sell stocks due to fear.

## *Recommendations*

Aiming at above research results, the following suggestions are proposed in this study: (1) Investors have to cultivate to buy in or sell out in critical time without hesitate or regret and would not affect the judgment by emotion. The difference is not the accurate prediction, but lies in the confidence in the rational judgment. It is a kind of excellent psychological quality to keep objective and calm and not to be panic because of market whisper; (2) A market is always honest, direct, uncovered, and not changing the characteristics. By adapting to it, observing the information from the market, following the market price to change personal ideas, discarding prejudice, learning from the market, not expecting the market to fulfill personal ideas, presenting careful attitudes to learn, and achieving good trading habits, people could begin from changing themselves right now; (3) Investors should regard some trading preference as observation points. Preference against the wind is to realize profits, and taking advantage of preference is to continuous hold the stocks after making profits. A loser would always blame the external environment, while a successful trader would introspect himself/herself, as there are various possibilities in the market; and, being rational and irrational would determine the trading result.

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