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The Effects of Personality Types and Demographic Factors on Overconfidence Bias and Decision Making of Investment Types

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Abstract

In financial management theories, an investor will act rationally and make a decision to invest based on the rules in the financial management theory. Nevertheless, in reality, the decision making to invest is very often irrational and not in accordance with the financial management theory. This deviation is caused by the bias of investors' behavior in making a decision. Investors who only focus on the return of an investment without paying attention to the risks are said to experience overconfidence bias. This research analyses the factors which are considered to influence investors with overconfidence bias in deciding the investment types. The factors are personality type, marital status, income level, work experience, and fields of study that have been taken. This research can contribute to completing the study of financial management, particularly in the investment decision and putting psychological factors in the analysis of financial management. The results of this study are demographic factors and personality types simultaneously affect overconfidence bias and decision making of investment types.

Keywords: Investment; overconfidence bias; personality types; demographic factor.

1. Introduction

Every investment product has a different risk and returns, as stated in the principle of finance that a high risk can result in a high return, and vice versa. In this case, it is predicted that what makes one investor not bold enough or too bold to take a risk is the level of vulnerability of the risk that a decision maker is willing to take.

The phenomenon occurring in the financial world is the fact that there are investors who take an irrational financial decision which risks a big loss. This financial investment decision does not accord with the tendency of carefully considering and taking advantage of accurate information to invest. This research will treat an investment decision as a phenomenon that is frequently seen in the financial world. The investment decision will lead an investor to the choices of investment types as the decision he makes. The investment chosen is based on risk and return analysis. (Hidayat & Setyaningsih, 2011). The high risk taken shows the difference in the investor's self-confidence, especially in making a decision. The risk contained in every type of investments differs; the high risk shows the role of intuitive reasoning and demands the boldness of speculation towards the financial situation faced. This condition describes an investor with overconfidence bias, in which the tendency will unconsciously be taken into account in every financial and business decision. In the simplest form, overconfidence can be defined as a conviction without any rational foundation in a person's intuitive reasoning, judgment, and cognitive ability. (Pompian, 2006).

An individual's decision making cannot be separated from the psychological factors in each. In behavioral finance, the study of psychology can explain how the role of the psychological process can become the background of an individual's behavior. Investors will make a decision based on the psychological process on the investment stimuli in the surroundings. Behavioral Finance Theory indicates the combination of Psychology and Finance. It is assumed that the tendency is related to the types of personality and demographic factors, such as marital status, income level, work experience, and the fields of study taken. A person's behavior in the financial sector can be analyzed from the individual's internal factors. The factors in an individual cover the individual's personality and demographic factors.

The investor's overconfidence behavior is interesting to analyze to get an analysis of financial behavior that is more accurate and does not cause both a significant financial loss and a significant loss in business. The overconfidence behavior can be analyzed using a psychological approach by considering the personality and demographic factors that become the background. Goldberg (1990) mentions the big five personality, which describes the personality characteristics that an individual is aware of existing in his daily life. Goldberg (1990) terms this fundamental approach Lexical (Language). Big Five describes an individual's personality to be the types of Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness.

The research related to the influence of personality type on the vulnerability to face a risk has been done by Mayfield et al. (2008), who find that an individual who is more extraverted tends to make a short-termed investment, while that with high neuroticism and risk aversion tends to avoid this activity. An individual who avoids risks (risk-averse) will not get involved in a long-termed investment. Another factor that will go along with the overconfidence financial behavior is believed to be the demographic factor.

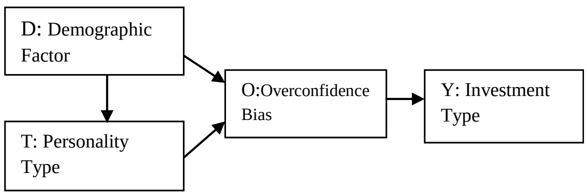
The students of the Faculty of Economics, especially those majoring in the study of finance will later become economic and financial actors, including those who will become investors who will represent an individual or a particular form of business. The research involves students as the research subjects to analyze the potential of an investor's overconfidence financial behavior by looking at the personality and demographic factors. The research can contribute to the complete study of financial management, in particular in the investment decision and in inserting the psychological factors in the analysis of financial management.

Based on the study background above and the difference between theory and practice, the researchers are interested in doing the research with the title of The Effects of Personality Types and Demographic Factors on Overconfidence Bias and Decision Making of Investment Types**,**

2. Literature review

If seen from the phenomena of investment decision making, it is found that some investors do not show any data collection before and their decisions even cannot be understood by most economic actors because the bases of the decision making deviate from what is typically done. One of the phenomena is termed overconfidence bias. Overconfidence bias is a kind of bias that shows a prediction error done by an investor with a conviction or self-confidence to do a situational analysis without considering the reality of the situation. The process of knowing the situation is not in line with the research process and the systematic steps. The overconfidence bias is dangerous for investors because it has the chance of mistakes taking place in making a decision and causing a significant loss. The research result of Tjandrasa (2014) concludes that overconfidence bias influences the result of a decision or level of agreement. Dashtbayaz & Mohammadi (2016) also conclude that overconfidence bias can cost an investor a loss. Huang et al. (2016) find that CEO who experience overconfidence bias tend to be bolder in determining the high-risked debt structure. The same thing is put forward by Ho et al. (2015), who conclude that people with overconfidence bias tend to take a higher risk. Besides, the research of Mayfield et al. (2008) finds the correlation between personality type and vulnerability of facing risks in which overconfidence is a bias on risk-taking. However, the research of Sitlani et al. (2011) concludes that knowledge about finance and experience make an investor act more rationally. Psychological researches are analyzing the influence of demographic factors on personality type, one of which is done by Moutafi et al. (2003), who conclude that age differences, sex, income, and education can be the background the changes of the psychological aspects in an individual. The research of Alrabadi et al. (2011), who analyzes the influence of demographic factors on overconfidence bias, conclude that it is only the skill that significantly has a positive influence on overconfidence bias. Furthermore, the research result of Tekçe et al. (2016) concludes that overconfidence bias positively correlates with familiarity bias. The research of Bannier (2016) finds a strong correlation between sex and education level. Nevertheless, unlike the other findings, the research result of Koebel et al. (2016) finds that gender does not have any impact on overconfidence or risk-taking behavior. Bhandari & Deaves (2006) also find that financial knowledge does not influence overconfidence. On the other hand, the research of Dunning & Story (1991) concludes that gender and age do not influence overconfidence.

Based on the elaboration and different conclusion of the researches above, a research model and hypothesis can be built as follows:



Hypothesis 1: There is an influence of personality type and demographic factor on overconfidence bias.
Hypothesis 2: There is an influence of personality type, demographic factor, and overconfidence bias on the choice of risk investment type.

3. Methods

3.1. Data and Data Collection Method

The research aims to see the influence of personality type and demographic factor on overconfidence bias and the decision making of the investment type. The data are collected by using a questionnaire about overconfidence in investment behavior; the Myers-Briggs Type Indicator is used to measure the personality and demographic data of the research subject.

3.2. Population dan Sample

The population of the research is the Bachelor and Master Program students of the Faculty of Economics of minimum 22 years old in University X in Bandung. The reason for choosing the population target is that students of the Faculty of Economics in the last semester of the Bachelor Program as well as the Master Program have already got some theories of the right ways of investment by taking into account the risk and return rationally.
The research samples are:

- Students taking the finance subject in the Faculty of Economics
- The minimum age is 22 years old

The technique of sample collection is purposive sampling by having the characteristics determined and describing research variables on the subject that becomes the research sample. In this study, we collected 170 samples.

3.3. Data Analysis Techniques and Hypothesis Testing

The analysis technique used in the research is the quantitative technique by multivariate regression statistic test to see the influence of several variables having a causal relationship.

4. Results

The analysis is divided into two parts: The first part analyzes the influence of personality type and demographic factors on overconfidence bias. The second part analyzes the influence of personality type, demographic factors and overconfidence bias on the choice of risky investment type**.**

Table 2. Analysis of multilevel regression statistic test to see the influence of personality and demographic factors on overconfidence bias.

Dependent Variable: OVERCONFID_BIAS
Method: Least Squares
Included observations: 170

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.550940	0.288806	1.907.647	0.0582
PERSONALITY	0.055032	0.025176	2.185.919	0.0302
MARITAL_STATUS	-0.156705	0.107712	-1.454.842	0.1476
SALARY	0.030091	0.083742	0.359326	0.7198
WORK_EXP	-0.025847	0.084301	-0.306600	0.7595
STUDY_PROGRAM	-0.200899	0.199087	-1.009.102	0.3144

Dependent Variable: OVERCONFID_BIAS
Method: Least Squares
Included observations: 170

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.418033	0.043442	9.622.764	0.0000
EXTRAVERSION	-0.372781	0.486414	-0.766386	0.4445
AGREEBLENESS	-0.168033	0.081755	-2.055.321	0.0414
CONSCIENTIOUSNESS	-0.041667	0.121059	-0.344185	0.7311

The result of Table 2 shows that simultaneously the demographic factors do not influence overconfidence bias (OB), and each demographic factor does not show any significant influence, either. Yet, personality factors simultaneously influence overconfidence bias as much as 0.055 with *p-value* = 0.0302), in which the personality factor agreeableness (β = -0.14; p = 0.05) and openness (β = 0.15; p = 0.03) shows a significant influence on overconfidence bias. The other personality factors do not show a significant influence (p> 0.10). This means that the more agreeableness personality trait an individual has, the least overconfidence bias that an individual has. On the other hand, the more openness personality trait a person has, the more overconfidence bias that a person has.

Table 1. Variable Operationalization

NO	VARIABLE	CONCEPT	INDICATOR	SCALE
1.	investment decision	The types of investment which differs based on risks	Form of investment	ordinal
2	overconfidence	Overconfidence is a conviction without any rational foundation in a person's intuitive reasoning, judgment, and cognitive ability (Pompian, 2006).	The level of an individual's conviction of an assumption, prediction, interpretation	ordinal
3	demography	Age, sex, income, and education	Age Sex Income Personality	ordinal
4	personality	Personality is a dynamic constellation of an individual is from an individual's characteristics in daily life,	Types of personality Neuroticism (N) Extraversion (E) Openness to New Experience (O) Agreeableness (A) Conscientiousness (C)	nominal

Table 3. Analysis of multilevel regression to see the influence of personality and demographic factors, and overconfidence bias on the choice of the type of risk investment**.**

Dependent Variable: INVESTMENT_TYPE
Method: Least Squares
Included observations: 170

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.405267	0.257008	1.576.863	0.1168
OVERCONFID_BIAS	0.600656	0.068731	8.739.205	0.0000
PERSONALITY	0.037297	0.022480	1.659.106	0.0990
MARITAL_STATUS	-0.108813	0.095417	-1.140.388	0.2558

Method: Least Squares
Sample: 1 170
Included observations: 170

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.418033	0.043442	9.622.764	0.0000
EXTRAVERSION	-0.372781	0.486414	-0.766386	0.4445
AGREEBLENESS	-0.168033	0.081755	-2.055.321	0.0414
CONSCIENTIOUSNESS	-0.041667	0.121059	-0.344185	0.7311
NEUROTICISM	0.132530	0.245611	0.539594	0.5902
OPENNESS	0.152653	0.074631	2.045.441	0.0424

The result of Table 3 shows that simultaneously the demographic factors, overconfidence bias, and personality type influence the type of risk investment with p-value = 0.00. The income level (salary), as well as the length of work experience, influences the choice of the type of risky investment, while marital status and type of study programs do not influence the choice of the type of risk investment. The personality factors simultaneously influence the choice of the type of risk investment as much as 0.03 with p-value 0.09. The agreeableness personality factor (β = -0.16; p = 0.04) and openness (β = 0.15; p = 0.04) show a significant influence on the choice of the type of risk investment. The other personality factors do not show any significant influence (p> 0.05). This means that the more agreeableness personality trait a person has, the more unlikely the person will choose the type of risk investment. On the other hand, the more openness personality trait a person has, the more likely the person will choose the type of risk investment.

5. Discussions

The test result of the influence of personality on overconfidence bias shows that there is a significant influence of openness to experience and agreeableness on overconfidence bias. Personality is the overall way of an individual responding to and interacting with the surroundings. Openness to experience is a personality that shows a tendency to react fast and openly towards information and the situation around him. This is shown by the individual's openness to ideas, interests in various things around him, openness to the stimuli in the surroundings. Openness to experience also describes the depth of thinking, in-depth evaluation, and willingness to new experiences through his interaction with the surroundings. The interaction with the surroundings is a meaningful way to get the expected experience. Another characteristic of this personality is an openness to uncommon things. Hence, an individual with an outstanding personality of having an openness to experience will feel safer and more comfortable if facing a situation with unclear rules or customs. He will also feel safer and more comfortable in facing situations that change a lot. He is capable of tolerating feelings when facing changes and uncertainty. This supports the increase in self-confidence in experiencing a new situation. The self-confidence will keep being developed with the tendency of being open to information and new experiences that he keeps doing.

The personality of agreeableness has a significant influence on an inverse relationship. This means the lower the agreeableness is, the higher its influence is on overconfidence bias. An individual with the personality of agreeableness has the characteristic of prioritizing other people's interest first, humble, soft-hearted, trusting other people, and open. The characteristic of the personality that shows the description of an individual who is careful is not in line with the description of overconfidence bias. The characteristics of the personality show the trait of being careful to give reaction and to interact with the surroundings. If facing a situation in the surrounding, an individual with this type of personality will show an effort to see the advantage and disadvantage for other people, will need other people's opinion to give inputs on the decisions to be made. What to be done before making a decision is not in line with the characteristics of overconfidence bias which will not include knowledge and analysis as the references for the decision. The influence of feelings is quite big, but it needs the involvement of other people and the surroundings to be able to reach the best deals for many people.

The personality of openness to experience shows a significant influence on the choice of the risks of investment. The more open an individual is to the life experiences, the more likely he will decide to choose an investment with a high risk. The more information and experiences he gets in the surroundings, the more chances he has to know the surrounding situation including the uncertain things in the surroundings. The uncertainty in the surroundings will open an opportunity for a person of this personality type to explore and try the uncertain things in the surroundings to finally be able to get the certainty of the data.

The open-mindedness will enable him to see the data extensively and deeply, and this will be the material for the analysis to know the high risks of the decision he makes.

The personality type of agreeableness which has the characteristic of having a calm reaction and a close relationship with the surroundings will give the influence on the shortage of boldness in deciding to invest with a high risk. If an individual shows a low level of agreeableness, he will show the opposite trait, such as not trusting the surroundings, being suspicious, challenging to collaborate, emotional, and manipulative. These characteristics will make an individual give a reaction that he does not need other people's opinions, and does not care with the condition of the surroundings. This will encourage him to make a judgment just based on his condition so that he will not make much consideration on the type of investment that he will take.

6. Conclusions

Based on the test result, it is explicitly described that personality factor and overconfidence bias have a significant influence on the investment decision. The personality factor will become a reaction and tendency pattern for individuals to interact with the surroundings based on the characteristics they have. The personality factor which has an open reaction and the importance of interacting with the surroundings will influence the forming of the self-confidence to choose an investment. In this research, it is found that overconfidence bias which is shown by an individual is still based on the process of data collection to decrease the prediction errors done by an investor with the conviction and self-confidence to do a situational analysis. The significant intuitive phenomenon and the different decision from the safe investment decision can be explained by the personality tendency which makes use of data as the primary data to step on the more extensive and deeper exploration of the surroundings.

The income level (salary) and the length of work also influence the choice of the type of risk investment. The higher the income level is, the safer the investment form is. The longer work experience will also influence the choice of a safe investment. Both the points show a direct influence on the decision of choosing an investment and not on overconfidence bias. The two data show that the high or low investment choice is based on financial and work experience consideration which will then help make the best consideration of choosing an investment.

The personality type of openness to experience positively correlates whereas the type of agreeableness negatively correlates with overconfidence bias and investment decision making. Both have a significant influence on overconfidence bias. The active way of reacting and the experience in the surroundings become the consideration of the self-confidence forming to make an investment decision. Thus, personality type significantly influences overconfidence bias, which is in line with the research result of Mayfield et al. (2008), which concludes that there is a correlation between personality type and the vulnerability of facing risks. However, in this research the demographic factors, both simultaneously and separately, do not have any influence on overconfidence bias, which is in accordance with the research results of Koebel et al. (2016), Bhandari & Deaves (2006), and Dunning & Story (1991), which state that demographic factors do not influence overconfidence bias.

Personality type and demographic factors simultaneously influence overconfidence bias and decision making of the type of investment. This is consistent with the research result of Sitlani et al. (2011), which states that demographic factors influence the choice of investment. The novelty of this research is the finding of the significant correlation between personality type and demographic factors in the choice of the type of risk investment.

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