

Personality as Moderating Variables on Risk Preference Determinants

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ABSTRACT

This study will investigated the personality dimensions as a moderating variables that influence on risk preference determinants. The big five dimensions of personality are extrovertion, agreeableness, conscientiousness, neuroticism and openness. As the determinants of risk preference are investor experience, investment period, investor interest, investor motive, investor emotion, self control, financial planning and control, financial condition, risk preference. This study employed the investors in Indonesian Stock Exchange especially the investors from the big cities Indonesia through many financial and securities all over Indonesia. The data has found through distributed the questionnaires to the investors directly, and also direct mail. The focus of the study is to measure the moderating effect of personality toward risk preference determinants. Because different investor has different preference. The result of the study stated that the most influences factor towards risk preference is neuroticism and the most independent, not moderated, is investor emotion. Neuroticism, the biggest influence because of the characteristcs or the investors was worried, pessimistic and other negative sense. The investor concern about risk preference, so, the influence of neuroticism become one of the most influence dimensions toward risk preference.

Keywords: personality, survey, determinants of risk preferences

Introduction

One of the factors that is important in behavior finance for investors in the capital market is an investor personality. Personality is the set of characteristics that underlie the relatively stable behavior patterns in response to the ideas, objects or people in their environment. Basically there are three factors which form the personality. They are genetics, environment and situation. Characteristics or personality types focused on this study are *the big five personality* model which consist of *extraversion, agreeableness, conscientiousness, neuroticism*, and *openness*. Each dimension has characteristics, among others, *extraversion*: sociable, talkative, assertive, and self-confident. *Agreeableness*, friendliness, virtuous, cooperative, trustworthy and thoughtful. *Conscientiousness*, listen to conscience, responsible, discipline, hardworking, tenacious and having high N-Ach (*need for achievement*). *Neuroticism*, anxiety, tend to think negatively and *openness*, to be open, imaginative, responsive, creative and flexible. In investing, the investor has different views on the risk preferences. Thus each investor has different risk preferences. Determinants of risk preference itself can be divided into 8, including *investor experience, investment period, investor interest, investors motive, investor emotion, self control, financial planning and control, and financial condition* (Wahlund, 1996). With the different personality background then this study will examine the extent to which the role of personality in moderating the determinant of risk preferences.

Literature Review

Personality

Allport (1944) in his view states that human has individual traits, but human's behavior tend to form the unity or wholeness*. This view is further enhanced by Allport (1957) who states that the personality is a dynamic organization in an individual of the psychophysical system that determine their unique adaptation to the environment. When described in detail such definition encompasses four (4) aspects that are dynamic organization, determining, unique adaptation/adjustment, and surrounding environment.

Robbins et al. (2012) states that the personality is a total number of the ways in which an individual acts upon and interact with others. Some factors forming the personality are genetics, environment, and situation. Daft (2011) defines personality as a set of characteristics that underlie relatively stable behavior pattern in response to the ideas, objects or people in their environment. In brief, the personality can be described as the *big five personality dimensions* which include extraversion, agreeableness, conscientiousness, neuroticism, openness to the experiences.

One of the personality dimensions in the big five personality is an extraversion. Robbins (2008) says that extraversion is a personality dimension that describes a person who is able to socialize, be expressive and self-confident. Gholipour (2007) states that the extrovert people tend to be gregarious, warm, assertive, and socially minded.

Rad et al. (2014) in his study suggest that basically the investors always consider the risk and return, so they will invest their funds as much as possible in a sector that promises giving high return and low risk. However, in fact the investors have different characteristics, where these characters are created due to the presence of different personalities among investors themselves. This study uses a gender and age as a moderating variable for the big five personality. Regarding the results of this study, it can be concluded that the personality factors have significant effect on investment performance. Extraversion and agreeableness have significant negative effect on the perceptual errors. Neuroticism has a significant positive effect on the perceptual errors; neuroticism has a significant positive correlation with perceptual errors.

Agreeableness can be defined as friendliness; when making a decision or determining their preferences, the investors will choose the risk in accordance with the confidence level, and their humility or agreeableness (Gholipour, 2009). Conscientiousness means that the investor has characteristics of being responsible, reliable, conscientious, and well-planned. Robbins (2008) states that people with high conscientiousness levels would have characteristics of meticulous work and work hard, being more discipline and responsible, as well as very well-planned and programmed in each activity. Nicholson (2005) concludes that people having high scores on this dimension are likely to have good capability or expertise, being responsible, well-planned, reliable, and persistent and very disciplined in each activity. Neuroticism describes negative emotions such as anxiety and insecurity feelings. Individuals who have high scores in neuroticism are more likely to experience anxiety, anger, depression and tend to be emotionally reactive (Farzanepey, 2006). People with high neuroticism usually consider themselves as self-righteous; they can do anything themselves (Saadi 2009). Openness (Gholipour, 2007) shows flexibility and curiosity for new things. People who have high openness level are described as having the value of imagination, broadmindness, and a world of beauty.

In this study the personality as a moderating variable will be tested. The study will examine the extent to which the role of personality variable can strengthen or weaken its effect on the determinants of risk preferences which consist of investor experience, investment period, investor interest, investors motive, investor emotion, self control, financial planning and control and financial condition.

Some previous studies on the moderating role of personality among others are done by Kemmerrer (1990); Hsich (2012) on the moderating effect of personality on the job stress, concluding that the five dimensions of personality have very important role in strengthening and weakening the workload. Ulleberg (2003) and Law (2003) in their studies on the moderating effect of personality conclude that the five dimensions of personality have very important role in strengthening or weakening its effect on the determinant of human behavior. However, another study conducted by Salleh (2011) gives very different results. The results of this study found that the personality serves as moderating variable of the ability of external auditor to audit *fraud risk*. No personality variable is found to have a role as variable that strengthens or weakens the external auditor ability to audit the fraud risk.

In line with some studies described above it can be concluded that the person's personality may have moderating effect, meaning that it will strengthen or weaken its effect on the preferences they may choose. Regarding the person's preference in the choice of an investment, each of the personality dimensions will have different effects on the chosen preferences.

Risk Preferences

In making investment, an investor surely expects to earn return on his investment. However, while investing in any forms, there must be an inherent risk in every investment. Darmawi (2006: 18) states that risk has several definitions as follows: first, risk is the chance of loss; it is usually used to show the situation in which there is a possibility of loss. Second, risk is uncertainty, meaning that the risk represents uncertainty.

Furthermore, Hartono (1998: 100) says that the uncertainty may arise from the illusion of a person due to the limited knowledge in his field. Hsee (1998) argues that the risk preference constitutes the tendency of an individual to choose a risk option; it can be defined as a attitude of decision maker or investor towards the risky investment. According to Slovic (1995), the investor preference is the attitude and behavior of investors in making investment choices that is surely expected to provide optimum profit with minimum risk. Although there are some different types of investments, but there are only three groups of risk preferences or investor risk tolerances that are *risk averse*, *risk neutral*, and *risk seeker*.

Moderating Effect of Personality on the Determinant of Risk Preference

Moderating Effect of Personality on the investor experience

1. *Investor experience is moderated by extroversion*

Investor experience is actually formed in long processes; it can be formed by their knowledge or educational background, or events ever experienced, past experience, or even by information obtained (Wahlund, 1996). Therefore, based upon this argument it can be concluded that the investor experience has a negative effect on the risk preference.

2. investor experience is moderated by agreeableness

Crae (1992) states that people with agreeableness usually have characteristics such as being warm, helpful, attentive, and sympathetic to others. Rad et al. (2014) states that agreeableness reflects differences of individuals in their social relations. When investor experience is moderated by agreeableness, investors with lack of experience will further strengthen the risk preference.

3. Investor experience is moderated by conscientiousness

Mccrae (1992) says that conscientiousness describes a person who has strong desire, being assertive, discipline, and punctual. Previous studies conducted by Wahlund et al. (1996) and Saadi (2011) argue that person with good conscientiousness is responsible, calm, and trustworthy. Thus, when investor experience is moderated by this conscientiousness, investors who have lack of experience will further weaken the effect of investor experience on risk preference.

4. Investor experience is moderated by neuroticism

Farzanepey (2006) states that neuroticism represents an anxiety, anger, moodiness, doubt, insecurity, and unconfident. Saadi (2009) says that people with neuroticism tend to be egoistic, selfish and feel superior, because of worry, anxiety, and feel insecure. Therefore, when investor experience is moderated by neuroticism, the investors with lack of experience will further weaken the effect of investor experience on risk preference.

5. Investor experience is moderated by openness

Gholipour (2007) states that people who have openness personality are more likely to accept or agree with something new and the uncommon values and expected to accept new political, social and ethnic, and trust. Khalili (2009) says that openness is a personality dimension in which people who have this personality will be more likely or flexible to receive new ideology, political, social or trust. When investor experience is moderated by openness, the investors with greater experience will strengthen the effect of investor experience on the risk preference.

Moderating effect of personality on investment period

1. Investment period is moderated by extroversion

Regarding investment period, Wahlund et al. (1996) concludes that investors with a risk seeking preference will choose a short-term period, while investors with risk-averse preference will choose a long-term period. Thus, it can be concluded that the investment period has a negative effect on the risk preference. When investment period is moderated by extroversion, it will strengthen the risk preference.

2. Investment period is moderated by agreeableness

When investment period is moderated by agreeableness then it will further strengthen the risk preference for short-term investment. It means that short-term investors will further strengthen their preferences as risk seekers, while long-term investors will further weaken the risk preference as risk averse (Wahlund, 2006).

3. Investment period is moderated by conscientiousness

When investment period is moderated by conscientiousness, the short-term investors will further strengthen the risk preference. It means that short-term investors will further strengthen their preference and long-term investors will further weaken their preferences (Wahlund, 2006).

4. Investment period is moderated by neuroticism

When investment period is moderated by neuroticism the short-term investors will further weaken the effect of investment period on risk preference. And otherwise the long-term investors will further strengthen the effect of investment period on risk preference as risk averter (Wahlund, 1996; Farzanepey, 2006).

5. Investment period is moderated by openness

When investment period is moderated by openness then the short-term investors will further strengthen the risk preferences. It means that short-term investors will further strengthen the risk preferences. And otherwise the long-term investors will further weaken their risk preferences (Wahlund, 1996; Gholipour, 2007).

Moderating effect of personality on investor interest

1**. Investor Interest is moderated by extroversion**

Regarding investor interest, Elton et al. (2002) in his study on the investor preferences argued that the investment interest of each individual is different so it will affect a decision taken. With this argument it can be concluded that the investor interest will has a positive effect on risk preference. When investor interest is moderated by extroversion, then the investors who have high interest in investing will further strengthen the risk preferences. (Elton et al., 2002; Saadi, 2011; Crae, 1992).

2. Investor interest is moderated by agreeableness

Crae (1992) states that people with agreeableness usually have characteristics such as being warm, helpful, attentive, and sympathetic to others. Therefore, when investors interest is moderated by agreeableness, then it will further strengthen the risk preferences. It means that investors with a high interest in investing will further strengthen the risk preferences and otherwise the investors with a low interest in investing will further weaken their preferences (Elton et al., 2002; Crae 1992).

3. Investor interest is moderated by conscientiousness

Wahlund et al. (1996) and Saadi (2011) state that the people with conscientiousness are responsible, calm, and trustworthy. Therefore, when investor interest is moderated by conscientiousness it will further strengthen the effect of investor interest on the risk preferences.

4. Investor interest is moderated by neuroticism

Farzanepey (2006) states that neuroticism represents an anxiety, anger, moodiness, feeling insecure, and unconfident. Therefore, when investor interest is moderated by neuroticism, then investors who have high interest in investing then will further weaken the effect of investor interest on the risk preferences.

5. Investor interest is moderated by openness

In contrast, people with openness will be flexible and curious for anything new (Gholipour, 2007). As moderating variable, openness will strengthen the effect of investor interest on risk preference.

Moderating effect of personality on investor motive

1. Investor motive is moderated by extroversion

As moderating variable, extroversion will strengthen the effect of investor motive on the risk preference. It means that investors with preventive motive will further weaken their investor preferences and otherwise investors with speculative motive will further strengthen their risk preferences. (Burnett et al., 2009).

2. Investors motive is moderated by agreeableness

When investors motive is moderated by agreeableness, then investors with preventive motive will further weaken their risk preferences. Investors with a speculative motive will further strengthen the risk preferences (Gholipour, 2007).

3. Investor motive is moderated by conscientiousness

When investors motive is moderated by conscientiousness then the investors with preventive motive will further weaken the risk preferences. It means that investors with preventive motive will further weaken the risk preferences. And investors with a speculative motive will further weaken the risk preferences.

4. Investor motive is moderated by neuroticism

When investor motive is moderated by neuroticism, then investors with preventive motive will further strengthen the effect of investor motive on the risk preferences. It means that investors with preventive motive will further weaken their risk preferences and otherwise investors with a speculative motive will further strengthen the risk preferences.

5. Investor motive is moderated by openness

When investor motive is moderated by openness, then investors with preventive motive will further weaken the effect of investor motive on the risk preferences. It means that investors with motive preventive will further weaken the risk preferences. Investors with a speculative motive will further strengthen the risk preferences.

Personality moderating to the investor emotion

1. Investor emotion is moderated by extroversion

According to Wahlund et al. (1996) investor emotion includes the patience, being thoughtful, aggressive, and reactive. Therefore, based on this argument, then the investor emotion has positive effect on the risk preferences. Saadi (2011) and Crae (1992) say that the pople with good extroversion will be open, sociable, and brave. While Gholipour (2007) states people with high extroversion are very open even their weaknesses will be disclosed, being low ambition, flexible, easy to believe, and easy to decide something. Therefore, when investor emotion is moderated by extroversion the aggressive investor will further strengthen the risk preferences.

2. Investor emotion is moderated by agreeableness

Crae (1992) states that people with agreeableness usually have characteristics such as being warm, helpful, attentive, and sympathetic to others. When the investor emotion is moderated by agreeableness, the aggressive investor will further strengthen the risk preferences.

3. Investor emotion is moderated by conscientiousness

Wahlund et al. (1996) and Saadi (2011) states that the people with good conscientiousness are responsible, calm, and trustworthy. Investor emotion is moderated by conscientiousness, the investor who is high emotional or aggressive will further strengthen the effect of emotion on the risk preferences

4. Investor emotion is moderated by neuroticism

Farzanepey (2006) states that neuroticism represents an anxiety, anger, moodiness, feeling insecure, and unconfident. Investor emotion is moderated by neuroticism the investor who is emotional or aggressive will weaken the effect of emotion on the risk preferences.

5. Investor emotion is moderated by openness

Investor emotion is moderated by openness the investor with a high emotion level will further strengthen the effect of emotion on the risk preferences. It means that investors with aggressive emotion will further strengthen the risk preferences and otherwise the investors with stable emotion will further weaken the risk preferences (Gholipour, 2007)

Personality moderating to the self control

1. Self control is moderated by extroversion

Barberies (2001) and Wahlund et al. (1996) conclude that people with good self control will be able to control themselves, not easily to be affected by environment and being full confident. Therefore, self control has a negative effect on the risk preference. It means that investors with a high self-control level will further weaken the risk preferences while the investors with low self-control level will further strengthen the risk preferences (Gholipour, 2007).

2. Self control is moderated by agreeableness

Self control is moderated by agreeableness, the investors with a high self-control level will further weaken the effect of self control on the risk preferences. It means that investors with a high level of self control then will further weaken their risk preferences, while investors with a low level of self control will further strengthen the risk preferences (Saadi, 2011).

3. Self control is moderated by conscientiousness

Self-control is moderated by with conscientiousness, the investors with a high level of self control will further weaken their effect of self-control on the risk preferences (Saadi, 2011).

4. Self control is moderated by neuroticism

Farzanepey (2006) states that neuroticism represents an anxiety, anger, moodiness, feeling insecure, and unconfident. Self control is moderated by neuroticism, the investors with a high level of self control will further strengthen the effect of self control on the risk preferences.

5. Self control is moderated by openness

Openness is the flexibility and curiosity for anything new (Gholipour: 2007). As moderating variable, openness for investors who have a high level of self control will further strengthen the effect on the risk preferences.

Moderating effect of personality on financial planning & control

1. Financial planning and control are moderated by extroversion

The previous study conducted by Wahlund et al. (1996) and Chou (2010) concludes that people with better financial control and planning will be able to prepare a budget, able to control it and able to do evaluation on the decision taken. Saadi (2011) and Crae (1992) say that the pople with good extroversion will be open, sociable, and brave. While Gholipour (2007) states people with high extroversion are very open even their weaknesses will be disclosed, being low ambition, flexible, easy to believe, and easy to decide something. Financial planning and control are moderated by extroversion; the investors with the high financial planning and control ability will further strengthen the effect on the risk preferences.

2. Financial planning and control are moderated by agreeableness

Financial planning and control are moderated by agreeableness whereby investors with the high financial planning and control ability will further weaken the effect on the risk preferences (Chou, 2011).

3. Financial planning and control are moderated by conscientiousness

Financial planning and control are moderated by conscientiousness then the investors with a high financial planning and control ability will further weaken the effect on the risk preferences (Chou, 2011).

4. Financial planning & control are moderated by neuroticism

Financial planning and control are moderated by neuroticism; the investors with good planning ability will further weaken the effects on the risk preferences (Chou, 2010).

5. Financial planning & control are moderated by openness

Financial planning and control are moderated openness in which investors with the very good planning and control ability will further strengthen the effects on the risk preferences (Chou, 2010).

Moderating effect of personality on financial condition

1. Financial condition is moderated by extroversion

Financial condition is the financial condition of an investor that is measured from the income that they receive in each period as expressed by previous study done by Wahlund et al., (1996); Adhikara (2003). Investor with a high financial condition is more likely to have stronger risk preference, while the investor with low financial condition tends to have lower risk preferences. Financial condition is moderated by extroversion in which investors with a high financial conditions will strengthen the risk preferences.

2. Financial condition is moderated by agreeableness

Wahlund et al. (1996) and Chou (2010) conclude that an investor with a very good financial condition is usually easier to determine the risk preferences and otherwise if the investor does not have a good financial ability will tend to be more difficult to determine the risk preferences. Thus, the financial condition has a positive effect on the risk preference. Therefore the financial condition is moderated by agreeableness then it will further strengthen the risk preference.

3. Financial condition is moderated by conscientiousness

Financial condition is moderated by conscientiousness where the investors with a high financial condition will further strengthen the risk preferences.

4**. Financial condition is moderated by neuroticism**

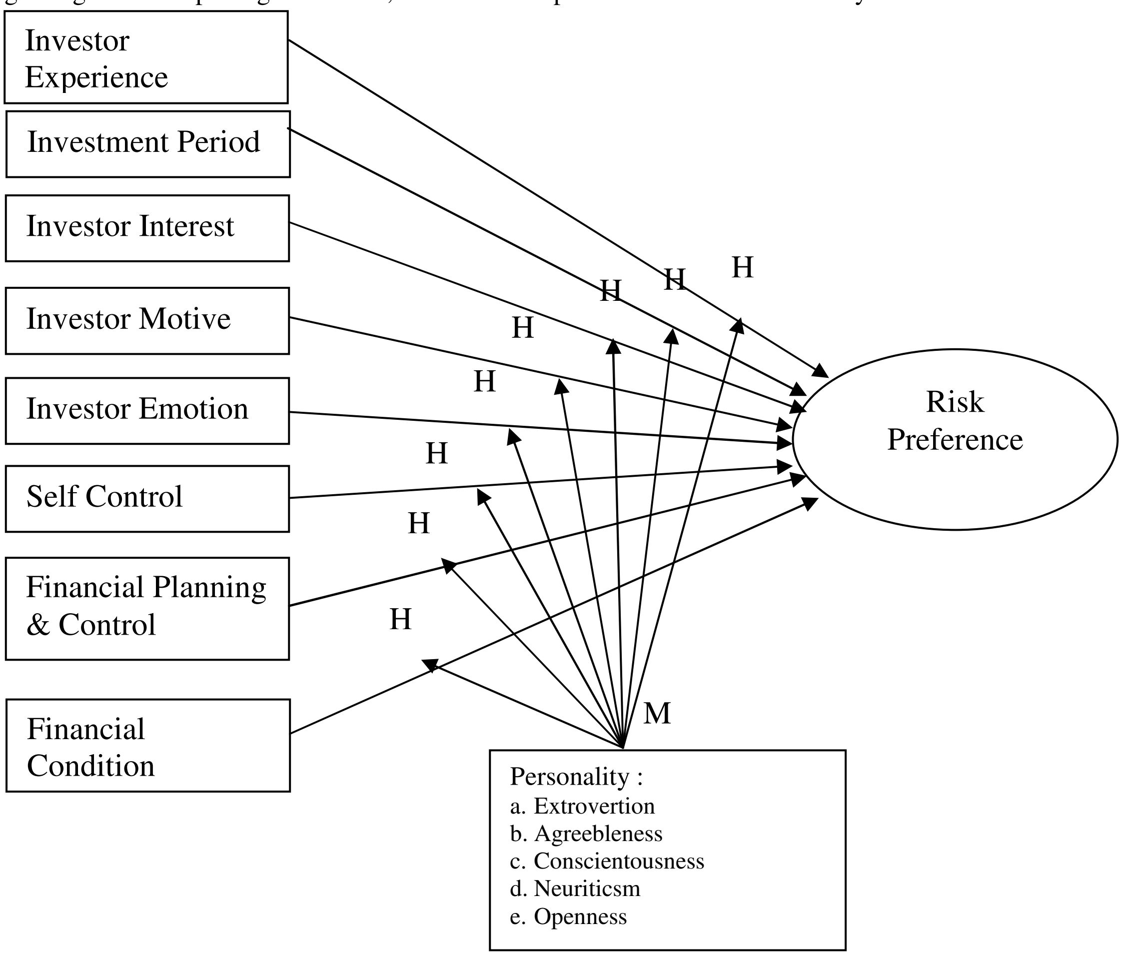
Farzanepey (2006) states that neuroticism represents an anxiety, anger, moodiness, feeling insecure, and unconfident. Financial condition is moderated by neuroticism where investors with a good financial condition will further weaken the risk preferences.

5. Financial condition is moderated by openness

Openness is a flexibility and curiosity for anything new (Gholipour: 2007). As moderating variable, openness for investors with a high financial condition will further strengthen the effect on the risk preferences.

Conceptual Framework of the Study

Regarding the description given above, then the conceptual framework in this study is as follows:



Picture 1. The conceptual framework of research

Independent variables or exogenous variables in this study are:

1. *Investor experience (Inv exp)*
2. *Investment period (Inv prd)*
3. *Investor interest (Inv int)*
4. *Investor motive (Inv mtv)*
5. *Investor emotion (Inv emt)*
6. *Self control (SC)*
7. *Financial planning & control (Fin P&C)*
8. *Financial condition (Fin con)*

While the dependent variable or endogenous variables in this study is the risk preference (RP). The moderating variable (M) here is a personality with five dimensions consisting of extroversion (Ex), agreeableness (Agr), conscientiousness (Cons), neuroticism (Neo), and openness (Opn)

Study Hypotheses

H1a: Investor Experience moderated by extroversion has a negative effect on the investor risk preference.
H1b: Investor Experience moderated by agreeableness has a negative effect on the investor risk preferences.
H1c: Investor Experience moderated by conscientiousness has a positive effect on the investor risk preferences.
H1d: Investor Experience moderated by neuroticism has a positive effect on the investor risk preferences
H1e: Investor Experience moderated by neuroticism has a positive effect on the investor risk preferences

H2a: Investment period moderated by extroversion has a positive effect on the investor risk preferences.
H2b: Investment period moderated by agreeableness has a positive effect on the investor risk preferences.
H2c: Investment period moderated by conscientiousness has a positive effect on the investor risk preferences.
H2d: Investment period moderated by neuroticism has a negative effect on the investor risk preferences
H2e: Investment period moderated by openness has a positive effect on the investor risk preferences

H3a: Investor interest moderated by extroversion has a positive effect on the investor risk preferences.
H3b: Investor interest moderated by agreeableness has a positive effect on the investor risk preferences.
H3c: Investor interest moderated by conscientiousness has a negative effect on the investor risk preferences.
H3d: Investor interest moderated by neuroticism has a negative effect on the investor risk preferences
H3e: Investor interest moderated by openness has a positive effect on the investor risk preferences

H4a: Investor motive moderated by extroversion has a negative effect on the investor risk preferences.
H4b: Investor motive moderated by agreeableness has a negative effect on the investor risk preferences.
H4c: Investor motive moderated by conscientiousness has a negative effect on the investor risk preferences.
H4d: Investor motive moderated by neuroticism has a negative effect on the investor risk preferences.
H4e: Investor motive moderated by openness has a negative effect on the investor risk preferences.

H5a: Investor emotion moderated by extroversion has a positive effect on the investor risk preferences.
H5b: Investor emotion moderated by agreeableness has a positive effect on the investor risk preferences.
H5c: Investor emotion moderated by conscientiousness has a positive effect on the investor risk preferences.
H5d: Investor emotion moderated by neuroticism has a negative effect on the investor risk preferences
H5e: Investor emotion moderated by openness has a positive effect on the investor risk preferences.

H6a: Self control moderated by extroversion has a positive effect on the investor risk preferences.
H6b: Self control moderated by agreeableness has a positive effect on the investor risk preferences.
H6c: Self control moderated by conscientiousness has a negative effect on the investor risk preferences.
H6d: Self control moderated by neuroticism has a negative effect on the investor risk preferences.
H6e: Self control moderated by openness has a negative effect on the investor risk preferences.

H7a: Financial planning and control moderated by extroversion have a positive effect on the investor risk preferences.
H7b: Financial Planning and control moderated by agreeableness have a positive effect on the investor risk preferences.

H7c: Financial planning and control moderated by conscientiousness have a positive effect on the investor risk preferences.
H7d: Financial planning and control moderated by neuroticism have a positive effect on the investor risk preferences
H7e: Financial planning and control moderated by openness have a positive effect on the investor risk preferences

H8a: Financial condition moderated by extroversion has a positive effect on the investor risk preferences.
H8b: Financial condition moderated by agreeableness has a positive effect on the investor risk preferences.
H8c: Financial condition moderated by conscientiousness has a positive effect on the investor risk preferences.
H8d: Financial condition moderated by neuroticism has a negative effect on the investor risk preferences
H8e: Financial condition moderated by openness has a positive effect on the investor risk preferences

Research Method

This research uses non-experimental study design where the type of study is explanatory study as it aims to find out and examine the effects of investor experience, investment period, investor interest, investor motive, investor emotion, self control, financial planning and control, financial condition on the determinant of risk preferences, which are moderated personality consisting of five dimensions such as extroversion, agreeableness, conscientiousness, neuroticism, and openness. Main method used in this study is a survey research with primary data. The unit of analysis is the individual investors who are investing in the Indonesia Stock Exchanges.

The population of this study is investors who are investing in the Indonesia Stock Exchange through some securities firms spread all over Indonesia areas. Until the end of December 2014, the number of sub-accounts of securities customers have reached 466,250 or increased by 14% from the previous year at 408,045 investors. Of this number, only about 100,000 investors actively conduct the transactions in capital market (CNN, Indonesia, 9 July 2015). The sample of this study is the investors in the Indonesia Stock Exchanges. The number of samples taken are at least 200 respondents/investors. The sampling technique was performed by accidental sampling or convenience sampling, namely non-probability sampling.

Measurement scale used in this study is a scale of standard ten scoring system (S-Ten) as described by Smith (2010) with measurement point of 1-10. Which differentiates this scale from Likert scale is that in the Likert scale that points used are 1-5 with a median score of 3. While the S-Ten uses a scale of 1-10 with a scoring system illustrates that a score of 1 means low and a score of 10 means high. This scoring is conducted against the 39 items of questions both for the personality and determinant of risk preferences. Measurement of risk preferences refers to Morgan Risk Profile Questionnaire using a measurement scale from 0 to more than 50 points indicating that the lowest score describes investors who dislike or avoid risk, and the score above 50 point means that they are risk seekers.

Procedures

Data obtained from the questionnaires were analyzed and interpreted as follows:

1. The data were entered, the values of investor experience, investment period, investor interest, investor motive, investor emotion, self control, financial planning and control, financial condition were calculated by tabulation of data based on the questionnaires returned.
2. Validity and reliability test

Validity and reliability tests were carried out to measure the validity and reliability of the study instruments. The main requirements of questionnaire are valid and reliable. The questionnaire is considered valid if the statements are able to uncover the anything that would be measured by the questionnaire. Statement is said reliable if someone's answer to the statement is consistent or stable from time to time.

Validity test was carried out to correlate the value of respondent answer in each variable against total values of answers. If the correlation value of variable is significant (i.e. the value of P < alpha 5%), then the variable is stated valid as the scale. Reliability test was carried out by calculating the alpha Cronbach's coefficient. If the coefficient value is > 0.7, then the variable can be stated reliable. The following is a Cronbach alpha coefficient formula:

$$r = \left[\frac{k}{(k-1)}\right]\left[1 - \frac{\sum \sigma_b^2}{\sigma_t^2}\right]$$

Description :

r = coefisien reliability instrument (cronbach alpha)
k = many question items
$\sum\sigma^2$ = total variance grain
σ^2 = total variance

3. The analysis was undertaken using multiple linear regression and MRA (Moderated Regression Analysis). The model for multiple linear regression equation is as follows:

$$PR = \alpha + \beta_1 Inv\ exp + \beta_2 Inv\ prd + \beta_3 Inv\ int + \beta_4 Inv\ mtv + \beta_5 Inv\ emt + \beta_6 SC + \beta_7 Fin\ P\&C + \beta_8 Fin\ con + \varepsilon$$

Model developed in this study is the moderating effects of personality on the determinant of risk preferences. This analysis was done using MRA (Moderated Regression Analysis) (Gujarati (2012). The model of MRA equation is as follows.

The model of determinant of risk preferences is moderated by extroversion:

$$PR = \alpha + \beta_1 Inv\ exp + \beta_2 Inv\ prd + \beta_3 Inv\ int + \beta_4 Inv\ mtv + \beta_5 Inv\ emt + \beta_6 SC + \beta_7 Fin\ P\&C + \beta_8 Fin\ con + \beta_9 Inv\ exp * ex + \beta 10 Inv\ prd * ex + \beta 11 Inv\ int * ex + \beta_{12} Inv\ mtv * ex + \beta 13 Inv\ emt * ex + \beta_{14} SC * ex + \beta_{15} Fin\ P\&C * ex + \beta_{16} Fin\ con * ex + \varepsilon$$

The model of determinant of risk preferences is moderated by agreeableness:

$$PR = \alpha + \beta_1 Inv\ exp + \beta_2 Inv\ prd + \beta_3 Inv\ int + \beta_4 Inv\ mtv + \beta_5 Inv\ emt + \beta_6 SC + \beta_7 Fin\ P\&C + \beta_8 Fin\ con + \beta_9 Inv\ exp * agr + \beta 10 Inv\ prd * agr + \beta 11 Inv\ int * agr + \beta_{12} Inv\ mtv * agr + \beta 13 Inv\ emt * agr + \beta_{14} SC * agr + \beta_{15} Fin\ P\&C * agr + \beta_{16} Fin\ con * agr + \varepsilon$$

The model of determinant of risk preferences is moderated by conscientiousness:

$$PR = \alpha + \beta_1 Inv\ exp + \beta_2 Inv\ prd + \beta_3 Inv\ int + \beta_4 Inv\ mtv + \beta_5 Inv\ emt + \beta_6 SC + \beta_7 Fin\ P\&C + \beta_8 Fin\ con + \beta_9 Inv\ exp * cons + \beta 10 Inv\ prd * cons + \beta 11 Inv\ int * cons + \beta_{12} Inv\ mtv * cons + \beta 13 Inv\ emt * cons + \beta_{14} SC * cons + \beta_{15} Fin\ P\&C * cons + \beta_{16} Fin\ con * cons + \varepsilon$$

The model of determinant of risk preferences is moderated by neuroticism:

$$PR = \alpha + \beta_1 Inv\ exp + \beta_2 Inv\ prd + \beta_3 Inv\ int + \beta_4 Inv\ mtv + \beta_5 Inv\ emt + \beta_6 SC + \beta_7 Fin\ P\&C + \beta_8 Fin\ con + \beta_9 Inv\ exp * neo + \beta 10 Inv\ prd * neo + \beta 11 Inv\ int * neo + \beta_{12} Inv\ mtv * neo + \beta 13 Inv\ emt * neo + \beta_{14} SC * neo + \beta_{15} Fin\ P\&C * neo + \beta_{16} Fin\ con * neo + \varepsilon$$

The model of determinant of risk preferences is moderated by openness:

$$PR = \alpha + \beta_1 Inv\ exp + \beta_2 Inv\ prd + \beta_3 Inv\ int + \beta_4 Inv\ mtv + \beta_5 Inv\ emt + \beta_6 SC + \beta_7 Fin\ P\&C + \beta_8 Fin\ con + \beta_9 Inv\ exp * opn + \beta 10 Inv\ prd * opn + \beta 11 Inv\ int * opn + \beta_{12} Inv\ mtv * opn + \beta 13 Inv\ emt * opn + \beta_{14} SC * opn + \beta_{15} Fin\ P\&C * opn + \beta_{16} Fin\ con * opn + \varepsilon$$

Where:
Ex : *extraversion (*Moderating 1)
Agr : *Agreeableness (Moderating 2)*
Cons : *Conscientiousness* (Moderating 3)
Neo : *Neuroticism* (Moderating 4)
Opn : *Openness* (Moderating 5)
RP : *Risk Preference*
Inv exp : *Investor experience*
Inv prd : *Investment period*
Inv int : *Investor interest*
Inv mtv : *Investor motive*
Inv emt : *Investor emotion*
SC : *Self control*
Fin P&C: *Financial control & planning*
Fin con : *Financial condition*

4. Parameter coefficient sensitivity test or Wald Test is conducted to know significantly the parameter coefficient sensitivity of variable against dependent variable.

Analysis & Findings

Validity test is conducted using Pearson correlation. Results of data processing show that all the questions in each variable used are valid. Reliability of the items was measured using Cronbach's alpha with a confidence level of less than α = 0.05. Regarding these results it can be stated that almost all questions are valid. While the reliability test gives Cronbach's Alpha value at 0.849 on 49 items of questions, so that it can be concluded that the items are reliable to be used to measure an indicator.

Table 5.1
Validity test

Description	N	%
Valid	197	98.5
Cases Excluded	3	1.5
Total	200	100

Source: data processing

Table 5.2
Reliability test

Cronbach's Alpha	Number of items
.849	49

Source: data processing

Table 5.3

Respondent Characteristics

	Gender		Age				Education			
	Male	Female	<25 years	26-35 years	36-45 years	>45 years	Senior High School - Dipl	S1	S2	S3
Integrity	0.60	0.40	0.24	0.24	0.32	0.20	0.29	0.58	0.10	0.03

Source: Data processing

Table 5.4
Descriptive Statistics for Personality Variable

Variable	Minimum	Maximum	Mean	Standard Deviation
Extraversion	0.1	1	0.682	0.200191
Agreeableness	0.1	1	0.522	0.176556
Conscientiousness	0.3	1	0.735	0.170058
Neuroticism	0.2	0.43	0.5375	0.312783
Openness	0.1	1	0.7065	0.187841

Source: data processing

Table 5.5
Descriptive statistics for Determinant of Risk Preferences

Variable	Minimum	Maximum	Mean	Standard Deviation
Investor experience	0.1	1	0.5105	0.212049
Investment period	0.3	1	0.664	0.185407
Investor interest	0.1	1	0.6385	0.183401
Investor motive	0.1	0.9	0.493	0.219984
Investor emotion	0.1	1	0.463	0.207718
Self control	0.2	1	0.6895	0.179726
Financial planning & control	0.1	1	0.5885	0.272745
Financial condition	0.1	1	0.439	0.293102

Source: data processing

Before performing moderated regression analysis, the multiple linear regression modeling was done first to determine the parameter estimates and significance of the effect of the independent variable on the dependent variable or risk preferences.

Table 5.6
Linear Regression Analysis

Determinant of Variable	*Unstandardized Coefficients*		*t*	*Significance*
	B	*Std. Error*		
Constant	29.101	3.054	9.528	0.000
Investor Experience	1.491	0.236	**6.327**	**0.000*)**
Investment Period	0.574	0.282	**2.039**	**0.043**)**
Investor Interest	-0.156	0.290	-0.539	0.591
Investor Motive	-0.724	0.240	**-3.018**	**0.003*)**
Investor Emotion	-0.224	0.229	-0.980	0.328
Self Control	-0.093	0.286	-0.326	0.745
Financial Control&Planning	0.143	0.189	0.759	0.449
Financial Condition	0.359	0.176	**2.041**	**0.043**)**
Value of Determination Coefficient (R^2)	**0.262**			

Source: data processing *) 1% significance level, **) significance level of 5%

Moderated Regression Analysis

Table 5.7 explains that when personality is moderated, each variable of determinant has an effect on the risk preference as follows:

- Model 1(*extraversion*) :

$$\hat{Y}_1 = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_1M_1 + b_{10}X_2M_1 + b_{11}X_3M_1 + b_{12}X_4M_1 + b_{13}X_5M_1 + b_{14}X_6M_1 + b_{15}X_7M_1 + b_{16}X_8M_1$$
+ε

- Model 2(*Agreeableness*) :

$$\hat{Y}_2 = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_1M_2 + b_{10}X_2M_2 + b_{11}X_3M_2 + b_{12}X_4M_2 + b_{13}X_5M_2 + b_{14}X_6M_2 + b_{15}X_7M_2 + b_{16}X_8M_2$$
+ε

- Model 3 (*Conscientiousness*) :

$$\hat{Y}_3 = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_1M_3 + b_{10}X_2M_3 + b_{11}X_3M_3 + b_{12}X_4M_3 + b_{13}X_5M_3 + b_{14}X_6M_3 + b_{15}X_7M_3 + b_{16}X_8M_3$$
+ε

- Model 4(*Neuroticism*) :

$$\hat{Y}_4 = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_1M_4 + b_{10}X_2M_4 + b_{11}X_3M_4 + b_{12}X_4M_4 + b_{13}X_5M_4 + b_{14}X_6M_4 + b_{15}X_7M_4 + b_{16}X_8M_4$$
+ε

- Model 5(*Openness*) :

$$\hat{Y}_5 = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_1M_5 + b_{10}X_2M_5 + b_{11}X_3M_5 + b_{12}X_4M_5 + b_{13}X_5M_5 + b_{14}X_6M_5 + b_{15}X_7M_5 + b_{16}X_8M_5$$
+ε

Table 5.7
Results of Moderation Testing

Variable/ Moderation Variable	Model 1		Model 2		Model 3		Model 4		Model 5	
	B	Sig.	β	Sig.	B	Sig.	β	Sig.	β	Sig.
Constant	**33,002**	**0.000***	**35,456**	**0.000***	**30,459**	**0.000***	**35,539**	**0.000***	**32,618**	**0.000***
Investor Experience	0,005	0.686	-0.0003	**0.000***	0.006	0.447	0.007	0.140	0.005	0.691
InvestmentPeriod	-0,001	0.718	0,002	0,831	-0,001	0,259	**-0,001**	**0.000***	-0,002	0,147
InvestorInterest	-0,006	0,768	-0,002	0,830	**-0,002**	**0.005***	-0,005	0,712	-0,001	0,616
Investor Motive	-0,006	0.790	**-0.01**	**0.011****	0.001	0,163	**-0,007**	**0.011****	0.001	0,999
Investor Emotion	0,003	0,712	-0,006	0,874	0.005	0,951	0,003	0,117	-0,003	0,873
Self Control	-0.0003	0,805	0,004	0,467	0.0003	0,144	**0,003**	**0.003***	-0.0002	0,952
Financial Control&Planning	0,006	0,916	0,015	0,774	0,006	0,397	**0.017**	**0.013****	0.01	0,557
Financial Condition	**0,006**	**0.039****	0,007	0,410	0,007	0,989	0,009	0,191	0,005	0,515
InvestorExperience (moderated)	0,049	0,184	**-0.003**	**0.060*****	0.049	0.607	**0,041**	**0.000***	0.043	**0.087*****
InvestmentPeriod (moderated)	-0,004	0,826	0,007	0,517	-0.01	0,110	**-0,025**	**0.000***	-0,016	0,296
InvestorInterest (moderated)	-0,045	0,793	-0,015	0,738	**-0,019**	**0.004***	-0,053	0,648	-0,013	0,633
Investor Motive (moderated)	-0,042	0,343	**-0,054**	**0.068*****	0,007	0,328	**-0,075**	**0.000***	0,005	0,451
Investor Emotion (moderated)	0,033	0,966	-0,034	0,372	0,041	0,793	0,017	0,251	-0,023	0,719
Self Control (moderated)	0,008	0,893	0,017	0,749	0,006	0,161	**-0,003**	**0.002***	-0,003	0,882
Financial Control&Planning (moderated)	0,057	0,940	0,076	0,952	0,048	0,455	**0,098**	**0.018****	0,077	0,462
Financial Condition (moderated)	**0.05**	**0.089*****	0,035	0,873	0.05	0,731	0,057	0,362	0,039	0,897

*) 1% significance level **) *** significance level of 5%) significance level of 10%

Discussion and Results

1. The findings of this study show that the investor experience moderated by agreeableness has a significant negative effect on the risk preferences, meaning that agreeableness weakens the effect of investor experiences on the risk preferences. Moderation of neuroticism and openness has significant positive effects, meaning that neuroticism strengthens the effect of investor experience on the risk preferences; similarly, openness strengthens the effect of investor experience on the risk preferences. This is consistent with the hypothesis proposed.
2. The investment period moderated by neuroticism has a significant negative effect on the risk preference meaning that neuroticism weakens the effect of investment period on the risk preferences. This is consistent with the hypothesis proposed.
3. The investor interest moderated by conscientiousness has a significant negative effect on the risk preferences meaning that conscientiousness weakens the effect of investor interest on the risk preferences. This is consistent with the hypothesis proposed.
4. The investor motive moderated by agreeableness has a significant negative effect on the risk preferences meaning that agreeableness weakens the effect of investor interest on the risk preferences. In addition, it is also found that investor motive moderated by neuroticism has a significant negative

effect on the risk preferences meaning that neuroticism weakens the effect of investor motive on the risk preferences. This is consistent with the hypothesis proposed.

5. Based on these findings, no dimensions of the personality produce effect on risk preferences. This means that the personality does not moderate the investor emotion in generating effect on the risk preferences. This confirms that an individual tends to have overconfidence so that his emotion is not affected by any circumstances.
6. The findings in this study show that the self control moderated by neuroticism has a significant negative effect on the risk preferences meaning that neuroticism weakens the effect of self control on the risk preferences. This is consistent with the hypothesis proposed.
7. The findings in this study show that financial planning and control moderated by neuroticism have a significant positive effect on the risk preferences meaning that neuroticism strengthens to the effect of financial planning and control on the risk preferences. This is consistent with the hypothesis proposed.
8. The findings in this study show that the financial condition moderated by extroversion has a significant positive effect on the risk preferences meaning that extroversion strengthens the effect of the financial condition on the risk preferences.

In overall it can be concluded that the personality has a very important role in generating effect on the determinant of risk preferences. Proper placement of the personality domain will be very helpful in determining the risk preferences. The investors should carefully choose which investment they must make, for example, risk-seeking investors can choose a risky investment but safe enough such as investing in blue chip shares. On the contrary, risk-averse investors should choose safe and long-term investment such as bonds, thereby the investors will be able to maximize the return on their investments. Thus, brokers can easily target the prospective investors, while government can encourage the investment sector in the capital market.

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