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Research Paper

Impact of personality on risk tolerance

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ABSTRACT

Risk Tolerance plays an important role in the investment decisions that individuals make. It is defined as the degree of variability in investment returns that an investor is willing to withstand in their financial planning. This study investigates the impact of personality traits on risk tolerance. The personality traits chosen based on the Big Five Model and included openness, extraversion, conscientiousness, neuroticism and agreeableness. The study utilises a quantitative research methodology. A survey was circulated among individuals with a background in finance in India. It was hypothesised that there would be some relationship between the Big Five Traits and Risk tolerance. A correlational analysis was conducted to examine the same. No significant relationships were found between each of the Big Five Traits and Risk tolerance. The possible reasons for the same are discussed.

Keywords: *Personality, Risk tolerance*

Investment decisions made by individuals are largely dependent on their tolerance to risk. According to Investopedia, risk tolerance is the degree of variability in investment returns that an investor is willing to withstand in their financial planning. Financial risk tolerance is an important construct that has implications for a number of financial decisions. It is particularly important in the field of investment. Understanding risk tolerance for investors is important because it helps to determine the risk and return parameters of investment portfolios which may allow investors to make sustainable decision (Wong and Carducci, 2013). The fact remains that risk tolerance itself is affected by a number of factors. This may include personality and demographic variables. For instance, Grable (2000) found that risk tolerance itself is associated with a variety of personal variables like being male, older, married, professionally employed with higher incomes, more education, more financial knowledge, and increased economic expectations. For the purpose of this study, we choose to investigate the relationship between personality and risk tolerance.

A number of researchers have tried to examine how personality and risk tolerance are related. Personality factors seem to have an impact of an individual's risk tolerance behavior which then influences investment decisions about stock, securities and bonds (Pak and Mahmood, 2015). The researches that focus on the relationship between personality factors and risk tolerance have investigated varying conceptualizations and models of personality

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such as the Myers Briggs Personality Types, The Big Five Personality Factors, Type A and Type B personalities, etc. Carducci and Wong (1998) examined how type A and type B personality traits were linked to risk tolerance. They concluded that individuals with a type A personality took greater risks than individuals with type B personality. The findings were explained through the fact that individuals with type A personality (who tend to be highly competitive) sought to maximize their achievements by taking greater risks. Researchers have also found linkages between risk tolerance and Myers-Briggs Personality Preferences. These include four dimensions: where individuals prefer to focus their attention (extraversion versus introversion), how they acquire information about their surroundings (sensing versus intuition), how they make decisions (thinking versus feeling), and how they orient to the environment (judging versus perception). It has been found that individuals who have a strong preference for thinking over feeling tend to be more risk tolerant. However, individuals who have a slight preference for thinking are similar on their risk tolerance levels to those who have a strong preference for feeling. Individuals with a preference for judging are more tolerant to risks than those with a preference for feeling. The dimensions of sensing versus intuition and introversion versus extraversion did not have a significant impact on risk tolerance (Filbeck, 2005).

The most commonly explored personality traits in the context of risk tolerance are the Big Five Personality Traits consolidated by Costa and McCrae (1987). These big five traits are Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism (OCEAN). Openness is the extent to which an individual is willing to try new things and experiences. Individuals scoring high on this dimension tend to be curious, imaginative and creative while those low on this dimension are predictable, dislike change and stick to a routine. Conscientiousness is the degree to which individuals engage in goal directed behaviours. Individuals high on this dimension tend to be disciplined and organised while those scoring low on it tend to give in to their impulses and are disorganised. Extraversion is the extent to which a person seeks interaction with others. Individuals high on this dimension are gregarious, sociable and outgoing while those low on this dimension are reserved, quite and reflective. Agreeableness is the extent to which people agree to or go along with others. Those high on agreeableness are trusting, helpful and empathetic while those low on this dimension are critical and sceptical. Neuroticism is the extent to which a person is emotionally stable. Individuals high on this dimension tend to be anxious, angry and apprehensive while those low on these dimensions tend to be calm, even tempered and secure. Furthermore, each of these dimensions have their own facets (Costa and McCrae, 1987).

The relationship between the big five personality traits and risk tolerance has been investigated by numerous researches. Mayfield et al (2008) concluded that individuals who are more extraverted intend to engage in short-term investing, while those who are higher in neuroticism and/or risk aversion avoid this activity. Risk adverse individuals also do not engage in long-term investing. Individuals who are more open to experience are inclined to engage in long-term investing; however, openness does not predict short-term investing. In a paper investigating the relationship between personality traits, risk-taking attitude and investment decisions among potential private investors in a post-Soviet transition country, it was found that extraversion and openness to experience have a positive correlation with risk-tolerance behavior and agreeableness, conscientiousness and neuroticism are negatively correlated with risk-tolerance behavior (Pak and Mahmood, 2015). Other studies have also found similar relationships of the big five traits with risk tolerance (Wong and Carducci, 2013; Sadiq and Khan, 2019). While some researchers have found that individuals high on conscientiousness may take risks, they may do so cautiously (Sadiq and Khan, 2019), others point to the fact that conscientiousness is negatively related to risk tolerance (Wong and Carducci, 2013). Nicholson et al (2005) investigated the relationship between the big five traits and risk propensity. The researcher was able to identify a pattern for overall risk propensity: high extraversion and openness with low neuroticism, agreeableness, and conscientiousness.

In the present study, we wish to investigate the relationship between the Big Five Personality traits and Financial Risk Tolerance among a sample of those who have a background in investing or finance. With reference to the relevant literature cited above, we hypothesised that there would be a significant relationship between the Big Five Personality Traits and Risk Tolerance.

METHODOLOGY

Participants

The participants (n=50) included all individuals above the age of 18 with an educational background in finance or a past experiences in trading. There were 33 male and 17 female participants ranging between the age of 18 to 55. All participants were Indian. The age range of the participants was between, with the average age of the participants being 28.8 years. The participants recruited through purposive sampling. A message containing the details of the study was posted on various social media platforms to recruit the sample.

Design and Procedure

The study utilized a survey and a correlational design to relationship between big five personality factors and risk tolerance of an individual with financial background. The variables in the study were the Big five personality traits, which included Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism, and Risk Tolerance For the administration of scales, a google form consisting of three major sections was created: demographic details, Big five personality measures (revised scales) by Mayfield et al (2008), Financial Risk Tolerance Assessment Instrument by Grable and Lytton (1999). A message including the link for the google form was circulated on various social media platforms. The message gave details about the objective of the study as well as the inclusion criteria. People who fulfilled the criteria were encouraged to fill the form. All the invalid responses were deleted. After the collection of responses, the data was analysed with the help of correlational analysis.

Measures

The questionnaire consisted of three parts. The first part included six questions on the *demographic details* of the participants. These questions asked about their name, age, gender, occupation, if they had any educational background in finance and if they had any experience in trading or investing.

The second part of the questionnaire assessed people on the Big Five Factors of Personality. For this, *Big five personality measures (revised scales)* by Mayfield et al (2008) were used. The scale was adapted from the research by Mayfield et al (2008) and consisted of 23 items. Each item used a five-point Likert scale ranging from 'strongly disagree', 'disagree', 'neutral', 'agree', to 'strongly agree'. Some of the items were, "*When I'm under a great deal of stress, sometimes I feel like I'm going to pieces"*, *"I am a cheerful, high-spirited person"*, *"I have a lot of intellectual curiosity"*, *"I generally try to be thoughtful and considerate"* *and "I'm pretty good about pacing myself so as to get things done on time".* The items were scored as 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5 strongly agree. Some items were reverse scored.

The third part of the questionnaire measured risk tolerance. To measure it *Financial Risk Tolerance Assessment Instrument by Grable and Lytton (1999)* was used. The instrument consisted of 20 items assessing various dimensions of financial risk tolerance. The items included a variety of response alternatives that the participants could choose from. An example is, *"Which situation would make you the happiest?"* with the response alternatives being: "you win $50,000 in a publisher's contest", "you inherit $50,000 from a rich relative", "you earn $50,000 by risking $1,000 in the options market" and "any of the above—after all, you're happy with the $50,000". Another example is, *"In addition to whatever you own, you have been given $2,000. You are now asked to choose between"* with the response alternatives being, "A sure loss of $500" and "A 50% chance to lose $1,000 and a 50% chance to lose nothing". The items were scored as per the scoring key given by the authors.

RESULTS

The aim of the present study was to investigate the relationship between the Big Five Personality traits and Financial Risk Tolerance. We hypothesized that the Big Five Personality Traits would be significantly related to Financial Risk Tolerance. A sample of 50 individuals above the age of 18. The demographic characteristics of the participants are listed in Table 1.

Table 1 Demographic details of the participants (N=50)

Characteristics	**Number *(n)***	**Percentage (%)**
Gender		
Male	33	66
Female	17	34
Age		
< 20	6	12
20 - 30	26	52
30 - 40	6	12
40 <	12	24
Occupation		
Banker	1	2
Business	6	12
CA	1	2
CIO	1	2
Financial Advisor	1	2
Fixed Income Dealer	1	2

Characteristics	Number *(n)*	Percentage (%)
Home Maker	1	2
Marketing Professional	1	2
NA	1	2
Professor	1	2
Self Employed	2	4
Service	1	2
Student	28	56
Teacher	2	4
Tool Designer	1	2
Unemployed	1	2
Educational background or experience in Finance		
Yes	42	84
No	8	16
Experience in investing & trading		
Yes	42	84
No	8	16

As it can be seen from the table, the sample consisted of 33 males and 17 females. Most participants belonged to 20-30 age group. The participants were involved in a variety of occupations such as Banker, Financial Advisor, CIO, Fixed Income Dealer, Marketing Professional with most participants being students. 42 participants had an educational background in the field of finance and 42 participants had some prior experience with investing and trading.

The mean and the standard deviation of the scores of the participants on each of the measures used is listed in Table 2.

Table 2 Mean and Standard Deviation obtained for Personality types and risk tolerance

Characteristics	Mean	Standard Deviation
Personality Dimensions		
Neuroticism	13.16	4.149023
Extraversion	15.06	2.189119
Openness	17.92	2.371944
Agreeableness	12.82	2.545023
Conscientiousness	17.14	3.470046
Risk Tolerance	44.66	4.368766

Among the personality dimensions, the highest mean was obtained on openness (M=17.92, SD=2.37) followed by conscientiousness (M=17.14, SD=3.47), extraversion (M=15.06, SD=2.19), neuroticism (M=13.16, SD=4.15) and agreeableness (M=12.82, SD=2.54). Thus, the sample scored the highest on openness dimension and the lowest on agreeableness dimension. For financial risk tolerance, the mean score of the participants is 44.66 and the standard deviation is 4.37. The average financial risk tolerance was reported to be higher than the normative sample used by Grable and Lytton (1999). Here, the average financial risk tolerance was 37 with the standard deviation being 6.40. Thus, while the average financial risk tolerance in the present sample was higher than that of the normative sample, the variation among the scores was lesser than the normative sample.

To investigate the relationship between personality dimensions and risk tolerance, a correlational analysis (Pearson's R) was done. The results of the correlational analysis are depicted in Table 3.

Table 3 Correlation (Pearson's R) between personality dimensions and risk tolerance

Personality Dimensions	Correlation with Risk Tolerance	p Value
Neuroticism	-0.0973	0.502776
Extraversion	0.0321	0.824861
Openness	0.1529	0.289113
Agreeableness	-0.1726	0.229581
Conscientiousness	-0.0305	0.836156

As it can be seen from the table, the correlation between Neuroticism and Risk Tolerance came out to be -0.0973. Although the correlation is negative, the p value (p=0.502776) indicates that it is insignificant p=0.05. The correlation between Extraversion and Risk Tolerance came to be 0.0321 (p=0.824861) and was insignificant at p=0.05. The correlation between Openness and Risk Tolerance was calculated to be 0.1529 (p=0.289113) and was insignificant at p=0.05. The correlation between Agreeableness and Risk Tolerance was calculated to be -0.1726 (p=0.229581) and was insignificant at p=0.05. The correlation between Conscientiousness and Risk Tolerance was -0.0305 (p=0.836156) and was insignificant and p=0.05. Thus, the alternate hypothesis was not accepted.

DISCUSSION

The present study aimed at investigating the relationship between the Big Five Personality traits and Financial Risk Tolerance among a sample of those who have a background in investing or finance. It was hypothesised that there would be a significant relationship between the Big Five Personality Traits and Risk Tolerance. There was a total of 50 participants who were recruited through purposive sampling. Data was collected using an online questionnaire. The measures used included Big five personality measures (revised scales) by Mayfield et al (2008) and Financial Risk Tolerance Assessment Instrument by Grable and Lytton (1999). The data was then subjected to a correlational analysis.

An insignificant relationship was found between each of the personality dimensions (Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness) and Financial Risk Tolerance. Thus, the hypothesis was not accepted. The results were contrary to previous literature where a significant relationship between personality dimensions and risk tolerance was found. Grable (2000) found that a number of factors affect everyday financial risk tolerance. This includes gender, age, occupation, income, education financial knowledge, and economic expectations. A number of environmental (net worth, marital status, education, household income, and financial knowledge) and biopsychosocial factors (self-esteem) also affect financial risk tolerance (Grable and Joo, 2004). It is possible that in the present sample, these factors played a greater role in influencing financial risk tolerance than personality which is why an insignificant relationship between personality dimensions and risk tolerance was obtained.

The present study had certain limitations. First, the size of the sample was limited. It is possible that in case of a larger sample size, a significant relationship between the variables under study could have been established. Second, the demographic variables were not equally distributed. The sample comprised of more males than females. Moreover, the occupational status of a majority of the participants was 'student'. Third, the study did not investigate the effect of demographic variables on financial risk tolerance. Fourth, the study did not take into account the sub domains of financial risk tolerance.

Future research in this area could perhaps re-investigate the role of key demographic variables in influencing financial risk tolerance. It would be interesting to see how traits or dimensions based on other models of personality affect financial risk tolerance. Subsequent research can also focus on other domains of risk tolerance and risk taking such as risk taking in everyday matters.

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Conflict of Interest

The author declared no conflict of interest.

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