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# Impact of personality on risk tolerance and investment decisions

## A study on potential investors of Kazakhstan

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### Abstract

**Purpose** – The purpose of this paper is to investigate the relationship between personality traits, risk-taking attitude and investment decisions among potential private investors in a post-Soviet transition country, i.e. Kazakhstan. The study provides valuable insights to investment experts and policymakers to understand investors' behavior in post-Soviet transition countries.

**Design/methodology/approach** – A quantitative research method is used to measure personality traits, risk-taking behavior and investment decisions of the respondents. A survey was conducted among the students and teachers of a business school in Kazakhstan. Based on literature review, two multiple regression models were developed and tested in this study. Software packages SPSS and EViews were used to analyze the data.

**Findings** – The findings revealed that personality traits have some impact on an individual's risk-tolerance behavior, which, in turn, influences investment decisions about stock, securities and bonds. The results of this study imply that investment advisors should consider personal characteristics and individual risk tolerance, among other factors, when giving investment advice to private investors.

**Originality/value** – At present, there is no study or research available about investors' behavior and risk-taking attitudes on post-Soviet transition economies. Therefore, this study will contribute significantly toward the understanding of investors' behavior in these countries and will help policymakers and investment bankers make appropriate suggestions on financial advising.

**Keywords** Personality, Kazakhstan, Risk perception, Investment decision

**Paper type** Research paper

### 1. Introduction

An individual's investment decision process is based on a complex combination of demographics (i.e. age, gender, income and level of education) (Bali *et al.*, 2009; Hallahan *et al.*, 2003; Ozmen and Sumer, 2011; Mayfield and Shapiro, 2010), personal characteristics (personality traits, values, emotions, risk tolerance, etc.) (Chitra and Sreedevi, 2011; Mishra *et al.*, 2010; Young *et al.*, 2012), markets (i.e. expected risk, rate of return, transaction costs, market environment, etc.) (Chang, 2008; Ferguson *et al.*, 2011; Morse, 1998) and related factors. Traditional finance theories such as Efficient Market Theory (Fama, 1965, 1970) and Modern Portfolio Theory (Markowitz, 1952) advocate that investors are rational and base their decisions on relevant publicly available information. However, some research findings express doubt about the rationality of investor behaviors and indicate that decisions can be driven by psychological and behavioral factors (Chang, 2008; Clark-Murphy, 2004; Kourtidis *et al.*, 2011; Rober, 2003;



Weller and Thulin, 2011). Simon (1955) argued that, due to limited knowledge and lack of proper procedural rational, decision-makers make “satisfying” decisions as opposed to “optimal ones”, and decisions can be opportunistic rather than either rational or logical. Though decision-makers try to make decisions on a rational basis, their decision-making process is limited by their cognitive abilities, such as habits, values, reflexes, knowledge, etc., as well as by external environmental factors (Simon, 1979, 1987). The impact of these factors makes the decision-making process more complicated, rather than making it a simple bounded rational process. Psychological and environmental factors are instrumental in influencing the conditions and resources available to decision-makers, and rational economic behavior does not always happen in the real world (Kalantari, 2010; Simon, 1979). Prior research has also proven that investors tend to have behavioral biases related to personal traits, stereotypes, past trading experiences, etc. (Chen *et al.*, 2007; Kourtidis *et al.*, 2011; Rober, 2003; Sadi *et al.*, 2011; Sahi, 2012).

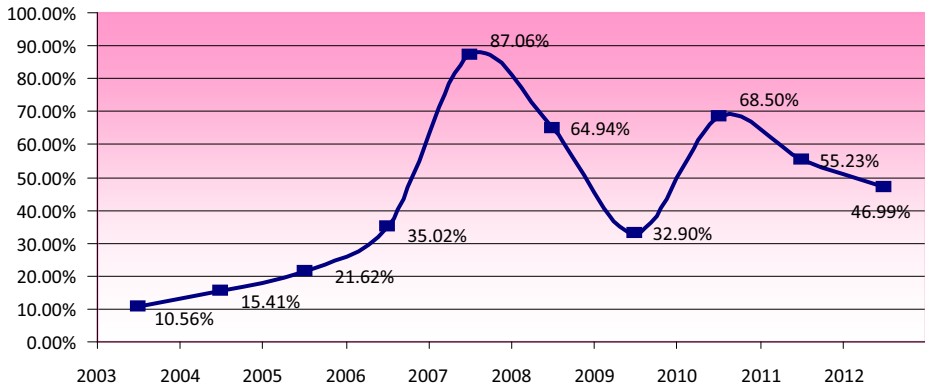
Though earlier research has investigated the relationship between personality and investment decisions, most of the studies have been conducted in capitalist-oriented countries (Lalumiere and Williams, 2010; Young *et al.*, 2012), and no study has been conducted in post-Soviet CIS countries. However, research evidence reveals that personalities, attitudes and values of the people of post-Soviet transition countries differ substantially from those of Western capitalist countries, which subsequently influence their decision-making processes in different ways (Ergeneli *et al.*, 2007; Kalyuzhnova and Kambhampati, 2008; Linz and Semykina, 2011; Semykina and Linz, 2010). Ardichvili (2001) also identified cultural value differences between Kazakhstan and other Western countries and suggested different methods to develop employees’ skills and knowledge in different sectors and industries. This paper aims to examine the relationships between personality traits, risk-taking attitudes and investment decisions pertaining to potential private investors of Kazakhstan.

The research question appears to be well-timed and relevant to emerging markets, such as Kazakhstan’s, where capital markets are not so efficient and the presence of private investor groups is not significant. However, the government’s decision to offer initial public offerings (IPOs) of national companies in Kazakhstan, in the near future, is facilitating the emergence of private investor groups. The findings of the study will help in understanding the investors’ decision-making process, attitudes toward risk and chosen investment strategies, within Kazakhstan’s unique socio-cultural context. We hope that the findings of this study will help policymakers take appropriate measures to educate and train future investors and develop and manage the emerging share market of Kazakhstan smoothly and effectively.

## **2. The research context: investment climate and share market in Kazakhstan**

The financial market in Kazakhstan is relatively new, but fast growing. The appearance of the securities market corresponded with the emergence of the pension system in Kazakhstan in 1998. Figure 1 shows that, in 2003, the Kazakhstan Stock Exchange (KASE) capitalization to GDP was only about 10.56 per cent. It reached 87 per cent of its historical maximum in 2008 followed by declines and recoveries as a result of the recent financial crises.

**Figure 1.**  
KASE capitalization  
to GDP of  
Kazakhstan



Institutional investors such as banks, pension funds and insurance companies are the major participants in the capital market. According to the KASE report, individual investors held only 17.57 per cent of all stocks, as of December 31, 2011 (KASE, 2012). However, these stocks are concentrated in the hands of several individuals who do not have intentions to resell stocks in the secondary market. The rest of the individuals in Kazakhstan still prefer to keep their money in bank deposits rather than investing it in financial instruments.

The introduction of public IPO programs in Kazakhstan, in 2012, is expected to change the investment climate in the country and make corporate stocks available for Kazakhstan citizens. The program assumes that it will sell 5-15 per cent of national companies' shares that belong to the National Welfare Fund "Samruk-Kazyna". The public IPO aims to facilitate further development of the securities market in Kazakhstan, diversify the population's savings, create an investment culture in Kazakhstan and increase transparency of public companies. However, it is still not clear if there is a public interest in stock investments. Based on the KASE survey published on March 2, 2011, 70 per cent of respondents did not want to participate in IPOs, 20 per cent were not sure and only 8 per cent were willing to buy stocks. Our research study aims to investigate the personal factors that influence the people's intentions to invest in stocks. We hope it will help policymakers and investment advisors find ways to motivate individual investors to be involved and actively participate in Kazakhstan's emerging share market.

### 3. Literature review

An investor's psychology is one of the important factors that affects his/her perception about the market and attitude toward risk (Chang, 2008; Kourtidis *et al.*, 2011; Young *et al.*, 2012). The risk-taking attitude, in turn, determines the investment style (Bali *et al.*, 2009; Fellner and Maciejovsky, 2007; Hunter and Kemp, 2004). Previous studies have revealed that personal traits, emotions, past experiences and financial knowledge are the key determinants of an investor's risk-taking attitude and investment decisions (Corter and Chen, 2005; Grable, 2000; Hunter and Kemp, 2004; Young *et al.*, 2012).

### 3.1 Personality traits and risk-taking behaviors

Personality refers to the way an individual interacts, reacts and behaves with others and is often exhibited through measurable traits (Crysel *et al.*, 2012; Hogan *et al.*, 1996; Robbins *et al.*, 2011). It influences the risk-taking attitudes in different spheres of a person's life, including social, gambling and investment decisions (Soane *et al.*, 2010). Research evidence has revealed that, in uncertain circumstances, personality traits guide an individual's decision-making behavior (Back and Seaker, 2004). Among personality models, the Big Five Factor (BFF) model is the most commonly used taxonomy, and it incorporates five personality traits: extraversion, agreeableness, conscientiousness, openness to experiences and neuroticism or emotional stability (Digman, 1990; Lee and Ashton, 2004; Weller and Thulin, 2012). In this study, we used the BFF model to explain human behavior, risk-taking propensities and investment decisions in different circumstances.

Extroverted people are friendly, sociable, warm and are not bound by rationality or principles. They are more prone to be guided by external tangible stimulators and, consequently, take risks more impulsively than introverts (Sadi *et al.*, 2011). They are outgoing and more optimistic about life and events. They may consult financial advisors, but, ultimately, take positive or forward-looking decisions. Positive attitudes about life and events could increase the overestimation of the market and underestimation of possible risks. On the other hand, negative attitudes and narrow attention cause overestimation of risks and may lead to the loss of profitable investment opportunities (Lo *et al.*, 2005). Those low in agreeableness are usually skeptical and curious, consider more information than highly agreeable individuals and, ultimately, take less risks and make more calculative decisions (Chitra and Sreedevi, 2011). Conscientious individuals are determined, well-organized, reliable, persistent and punctual and take higher risks less impulsively. Individuals who are high on openness to experience are creative, adaptive, more curious and non-traditional and, usually, tend to conduct new experiments and take higher risks (Mayfield *et al.*, 2008). Neuroticism is associated with a lack of effective cognitive skills, weak analytical abilities and poor critical thinking and conceptual understanding. It tends to freeze higher-order cognitive functioning and makes people feel anxious and scared of failure. Because risk-taking behavior is related to neurological impairments, those with low neuroticism feel greater anxiety when making risky decisions (Vigil-Colet, 2007; Young *et al.*, 2012). From a comparative perspective, some studies have revealed that extraversion and openness have a significant positive impact on the choice of making risky investments, as opposed to neuroticism, agreeableness and conscientiousness (Harlow and Brown, 1990; Hopfensits and Wranik, 2009; McCrae and Costa, 1996).

### 3.2 Personality and investment decisions

Previous research suggests that personality traits influence individuals' investment decisions (Crysel *et al.*, 2012). Extraverted individuals are sociable, lack deep analysis, focus on external events and information and have a sense of humor. An investor with a dominant extraversion trait may overestimate the gain and underestimate the loss, owing to his optimistic character. Agreeable individuals are usually cooperative, reliable, modest and respect others' opinion and advice. An investor with a dominant agreeableness trait is more likely to rely on an analyst's opinion and finds it difficult to make his/her own investment decision. Conscientious individuals have a certain degree

of confidence and are careful, analytical, methodological and self-disciplined and tend to have clear investment goals. Neuroticism is related to emotional instability, depression and self-centeredness. Highly neurotic individuals tend to overestimate the risk when the market crashes and may underestimate gain when the market is favorable. Investors with high openness to experiences show a strong preference for sensation, new things and complexity. He/she easily accepts new market information and may frequently change investment portfolios with changes in market situations.

### *3.3 Risk aversion and investment decisions*

Some empirical studies report a significant association between risk tolerance and specific investments. Ajzen and Fishbein (1980) indicate that behavioral intention can represent a person's readiness to engage in a specific investment behavior. According to Grable and Lytton (2003), holding of cash and bonds is positively associated with a lower level of risk tolerance. On the other hand, investing in stocks is expected to generate larger financial gain and long-term capital growth (Keller and Siegrist, 2006; Bali *et al.*, 2009). WaErneryd (2001) measures the investors' risk-taking attitude relative to their decision to invest in low-risk, medium-risk and high-risk assets. High-risk assets are associated with stock investments and derivatives trading, whereas low-risk assets are related to checking and saving accounts. Investors who are prepared to accept greater risks are more willing to buy stocks (WaErneryd, 2001; Clark-Murphy and Soutar, 2004; Wood and Zaichkowsky, 2004). Keller and Siegrist (2006) analyzed the factors that may influence the decision to invest in stocks and found that financial risk tolerance, level of income and existence of an investment account have significant positive effects on the willingness to invest in stocks. This effect is also stronger for men than for women (Kourtidis *et al.*, 2011; Yao and Hanna, 2005).

Bernstein (1976) and Mehra and Prescott (1985) indicated that investments in stocks result in higher returns compared to investments in bonds. This could be because stocks are riskier than bonds, and a stock's performance directly depends on a firm's performance and market volatility. Bonds, on the contrary, usually generate stable cash flows, and the claims of bondholders are usually settled before those of the stockholders in the case of a firm's failure. Bali *et al.* (2009) found that stock portfolios do not usually outperform bond portfolios in the short investment horizon. However, in the long run, stock returns consistently exceed bond returns.

### *3.4 Demographic variables and risk-taking behaviors*

One of the fundamental concepts of the investment decision-making process is the concept of risk. Based on individual level of risk tolerance, investors are classified into three categories: risk-averse, risk-neutral and risk-lovers. Demographic factors that have a significant impact on the investors' attitude to risk include age, gender, level of income, level of education and marital status.

*3.4.1 Age and risk.* There are controversial findings related to age and financial risk tolerance. Most studies indicate that risk tolerance increases with age (Grable, 2000; Kourtidis *et al.*, 2011; Wang and Hanna, 1997). However, other researchers report that younger respondents are more risk tolerant than older respondents (Selcuk *et al.*, 2010; Grable *et al.*, 2004).

*3.4.2 Gender and risk.* Majority of the studies consistently report that men are more risk tolerant than women (Grable, 2000; Selcuk *et al.*, 2010; Anbar and Eker, 2010). One

explanation of this gender difference is related to the role of a woman as a mother because she prefers a lesser amount of stable income rather than a larger amount of uncertain income. He *et al.* (2007) also found that women estimate the likelihood of gains and losses differently from men, and they ascribe more importance to losses than men do. The role of gender in risk perception may also vary with different cultures (Maxfield and Shapiro, 2010). Fellner and Maciejovsky (2007) and Lo *et al.* (2005) also reported that the higher level of risk aversion is negatively associated with trading frequency. As the trading activity of women is much lower than that of men, it is an indicator that women are more risk averse compared to men.

*3.4.3 Education and risk.* The level of financial literacy plays an important role in the acceptance of risks associated with particular financial investments. Usually, investors are less willing to engage in transactions in which they lack understanding (Anbar *et al.*, 2010). Grable (2000) found that respondents with higher levels of financial knowledge exhibit more risk tolerance. Corter and Chen (2005) reported that an investment experience proves to be an important predictive variable that positively impacts the probability of holding more risky portfolios. Wang (2011) revealed a positive relationship between investment experience and better performance in mutual funds trading business. Contrarily, other researchers did not find any significant influence of education on financial risk tolerance (Hallahan *et al.*, 2003; Selcuk *et al.*, 2010).

*3.4.4 Other demographic factors.* We consistently found that married respondents are more risk tolerant than single respondents, and subjects with higher incomes exhibit lower risk aversion compared to subjects with lower incomes (Grable, 2000; Grable and Lytton, 2003; Selcuk *et al.*, 2010). One explanation for this may be that shared income and wealth enables married couples to accept greater risks.

## 4. Methodology

### 4.1 Sample and data

The sample for this study comprised undergraduate business students and faculty members who were either studying or working at the KIMEP University, Almaty, Kazakhstan. These sample participants have received basic education in finance (i.e. they have completed courses in Accounting and Finance at the university level) and have attended the Investment Management course. The survey was conducted between April and May 2012. Overall, 160 questionnaires were distributed among the students who had enrolled in the Investment Management course and had gained some experience through online simulation trading practices; of these, 131 questionnaires were collected and 127 of them were found valid.

### 4.2 Concepts and measurements

The questionnaire consisted of three parts. The first part comprised 20 questions and measured the five personality traits mentioned in the BFF personality model. A total of 20 questions were selected from previous studies conducted by Mayfield *et al.* (2008) and Lee *et al.* (2005) to measure the BFF personality dimensions. Among the 20 questions, 4 were used to measure neuroticism, 4 were used to measure extraversion, 4 were used to measure agreeableness, 4 were used to measure conscientiousness and 4 were used to measure openness to experience. Sample questions included:

- “I can make friends easily and maintain the relationships” for extraversion;
- “I try to organize my work in advance” for conscientiousness;



- “I often feel sad and get worried when things do not go with my plan” for neuroticism;
- “I like to learn and try new things if they are within my capabilities” for openness to experience; and
- “I appreciate other people’s advice” for agreeableness.

The second part had five questions and attempted to estimate the individual’s risk-taking behavior. Attitude toward risk was split into the following two dimensions: above-average risk and below-average risk. These questions were selected from a study by Weber *et al.* (2002). Sample questions included, for the below-average risk attitudes, “When investing money, the word safety is more important for me than the word return” and for the above-average risk attitudes, “In the investment process, if it happens, I would not mind losing some money”. The third part used six questions to measure personal intentions toward investment decisions. These questions were selected from studies by Mayfield *et al.* (2008) and Vlaev *et al.* (2007). Sample questions included:

- “If I unexpectedly received some easy money, I would surely invest a certain amount of money in stocks”; and
- “I would prefer to invest in stocks rather than to keep money in a bank account” to measure investment decision in stocks.

For all questions, we used a six-point Likert scale, where 6 meant the highest and 1 meant the lowest score in respective personality traits. Apart from this, we collected data on each respondent’s age, gender, income, marital status, level of education, financial literacy and trading experience to control demographic characteristics. To ensure the reliability and validity of our questionnaire, we conducted a pilot study and calculated the Cronbach’s alpha ( $\alpha$ ) for the scaled items. Table I shows the reliability of different items of our questionnaire, which is estimated between  $\alpha = 0.726-0.818$ . These are much higher than the accepted standard alpha value of 0.6, as advocated by Cronbach (1951) (Table II).

#### 4.3 Hypotheses and models

The main objective of this study was to investigate the effect of an individual’s personality on his/her investment decision-making process. We assumed that personal traits, emotions and existence of experiences or knowledge are key determinants of the investor’s preferences. Therefore, we developed our first hypothesis as follows:

*H1.* Personality traits have an impact on the investors’ financial risk tolerance.

We used demographic characteristics, such as control variables, and we expected to find positive correlations among income, education and the level of risk tolerance and negative correlations between age and risk tolerance. Men were expected to be less risk averse than women. We also expected that financial education and previous investment experience would have a positive influence on the willingness to accept more risk. Consistent with each factor already explained in the literature review, we expected each trait to influence the level of financial risk tolerance as shown in Table III.

To test *H1*, we conducted a correlation analysis among the major variables of interest and a regression analysis. For the regression analysis, we used the OLS method and developed the following Model (1):

Demographic variables	Percentage of respondents
<i>Gender</i>	
Men	36.22
Women	63.78
<i>Age (years)</i>	
>20	40.15
21-30	54.33
31-40	2.36
41-50	1.57
>51	1.57
<i>Income (KZT)</i>	
<100,000	14.96
100,000-200,000	20.47
200,000-400,000	24.41
400,000-600,000	22.83
>600,000	17.32
<i>Marital status</i>	
Married	3.15
Not married	96.85
<i>Education</i>	
School/College	23.62
Bachelor	68.50
Master	3.94
Doctoral	3.15
Other	0.79
<i>Investment experience</i>	
Yes	63.28
No	36.72

**Table I.**  
Descriptive statistics  
of the sample

Scale	No. of items	Cronbach's alpha ( $\alpha$ )
Neuroticism	4	0.780
Extraversion	4	0.774
Agreeableness	4	0.818
Conscientiousness	4	0.726
Openness to experience	4	0.823

**Table II.**  
Reliability value of  
the scale

$$\begin{aligned}
 \text{RISK\_TOL } i = & \beta_0 + \beta_1 \text{ AGREE } i + \beta_2 \text{ EXTRA } i + \beta_3 \text{ CONS } i + \beta_4 \text{ NEURO } i \\
 & + \beta_5 \text{ OPEN } i + \beta_6 \text{ AGE } i + \beta_7 \text{ GENDER } i + \beta_8 \text{ INCOME } i \\
 & + \beta_9 \text{ MARRIAGE } i + \beta_{10} \text{ EDUCATION } + \beta_{11} \text{ FINCOURSE } i \\
 & + \beta_{12} \text{ INVEST } i + \epsilon_i
 \end{aligned} \quad (1)$$

Whereby, RISK\_TOL is the level of risk tolerance of respondent *i*, AGREE is the agreeableness trait of respondent *i*, EXTRA is the extraversion trait of respondent *i*, CONS is a conscientious trait of respondent *i*, NEURO is a neuroticism trait of respondent *i*, OPEN is an openness trait of respondent *i* and  $\epsilon_{i,t}$  is a random error term of the regression and assumed to be i.i.d.

Our second hypothesis is related to the relationship between the level of risk aversion and intention to invest in stocks. We assumed that high-risk tolerance would result in the investment of a larger proportion of resources in stocks and lesser proportion of resources in government bonds. Stock investment is considered a proxy of more risky and longer-term investments. We developed the second hypothesis for our study as follows:

*H2.* The level of financial risk tolerance has a positive effect on the intention to invest in stocks.

*H2* was tested using the Generalized Method of Moments (GMM). The GMM solves regression Model (1) and Model (2) simultaneously and provides better estimates than the OLS method. We used the statistical package EViews to analyze the regression with GMM:

$$\begin{aligned} \text{STOCK INVEST } i = & \beta_0 + \beta_1 \text{RISK TOL } i + \beta_2 \text{AGE } i + \beta_3 \text{GENDER } i \\ & + \beta_4 \text{INCOME } i + \beta_5 \text{MARRIAGE } i + \beta_6 \text{FINCOURSE } i \\ & + \beta_7 \text{INVEST } i + \epsilon_i \end{aligned} \quad (2)$$

### 5. Analysis and findings

The results of the correlation analysis (Table III) reveal that personality traits are to some extent correlated with each other. Extraversion seems to have a positive correlation with agreeableness ( $r = 0.268, p < 0.01$ ) and negative correlation with neuroticism ( $r = -0.323, p < 0.01$ ). Agreeableness has a positive correlation with conscientiousness ( $r = 0.259, p < 0.05$ ) and extraversion. Between personality traits and risk-tolerance attitudes, openness to experience has a positive correlation ( $r = 0.238, p < 0.01$ ) and agreeableness has a negative correlation ( $r = -0.194, p < 0.001$ ). These results are consistent with Harlow and Brown (1990), McCrae and Costa (1996) and Hopfensits and Wranik (2009).

Among the personality traits and individual risk-tolerance behavior, it appears that extraversion and openness to experience have a positive correlation and agreeableness, conscientiousness and neuroticism are negatively correlated with risk-tolerance behavior. However, among these relationships, correlations between agreeableness and risk tolerance ( $r = -0.194, p < 0.05$ ) and openness to experience and risk tolerance

**Table III.**  
Expected correlation  
between personality  
traits and investors'  
risk attitudes

Personality trait	Expected effect on risk attitude
Extraversion (EXTRA)	Positive
Agreeableness (AGREE)	Negative
Conscientiousness (CONS)	Negative
Neuroticism (NEURO)	Negative
Openness to the experience (OPEN)	Positive

( $r = 0.238, p < 0.001$ ) are statistically significant. No significant correlations were found between personality traits and investment decisions. However, investment decisions appear to be significantly influenced by individual risk-tolerance behavior. Higher levels of risk tolerance are positively associated with the intention to invest in stocks ( $r = 0.526, p < 0.001$ ). Similar findings were reported by WaÈrneryd (2001), Clark-Murphy and Soutar (2004) and Wood and Zaichkowsky (2004).

5.1 Regression results

The model for testing *H1* is overall significant with F-statistics equal to 2.58 (significance level is 1 per cent) and adjusted  $R^2$  equal to 21.4 per cent. Table IV presents the results.

The results of the first regressions reveal that the presence of the personality trait “openness to experience” has a significant positive effect (significant at 1 per cent) and “agreeableness” has a significant negative (significant at 5 per cent) effect on the level of risk tolerance. This implies that people who like to try new things and have strong personal opinions are more willing to invest in stocks. Men are less risk averse than women (significant at 5 per cent), and the presence of previous investment experience makes people more risk averse (significant at 5 per cent). This may be explained by the fact that investors who have had negative investment experiences in the past become more prudent when making their investment decisions. The second regression model’s results are presented in Tables V and VI.

Our major variable of interest, risk tolerance, is statistically significant at 1 per cent level and positive with *t*-statistics equal to 9.94 (Table V). This shows that investors with high-risk tolerance levels have stronger intentions to invest in stocks. This result is consistent with previous research (Clark-Murphy and Soutar, 2004; Keller and Siegrist, 2006; WaÈrneryd, 2001; Wood and Zaichkowsky, 2004). Among other factors, higher income (significant at 5 per cent) and the presence of investment experience (significant at 1 per cent) have positive effects on stock investments (Table V). The gender variable indicates that women are more willing to invest in stocks than men (significant at 10 per cent) (Table V). However, this result is not robust because when verified with other models, the significance of this variable disappears.

	1	2	3	4	5	6	7	8	9	10
Age	1									
Income	0.128	1								
Education level	0.486**	0.159	1							
Extraversion	0.013	0.082	0.111	1						
Agreeableness	0.100	-0.016	0.121	0.268**	1					
Conscientiousness	0.071	-0.042	0.129	0.004	0.259*	1				
Neuroticism	-0.014	-0.042	-0.041	-0.323**	0.125	0.138	1			
Openness	-0.062	-0.205*	-0.011	0.162	0.115	0.088	-0.070	1		
Risk Tolerance	-0.014	-0.057	-0.060	0.034	-0.194*	-0.146	-0.097	0.238**	1	
Investment Decision	-0.008	0.114	-0.021	-0.037	-0.092	0.019	0.016	0.114	0.526**	1

Notes: \*Correlation is significant at the 0.05 level (two-tailed); \*\*correlation is significant at the 0.01 level (two-tailed)

Table IV.  
The correlation matrix

**Table V.**  
Regression results  
using the OLS  
method

Independent variables	Coefficients		<i>t</i> -statistics	<i>p</i> -value
	$\beta_i$	SE		
CONSTANT	4.037	1.257	3.212*	0.002
AGREE	-0.187	0.094	-1.976**	0.051
EXTRA	0.063	0.095	0.662	0.509
CONS	-0.073	0.092	-0.792	0.430
NEURO	0.061	0.088	0.685	0.495
OPEN	0.317	0.112	2.829*	0.006
AGE	-0.115	0.102	-1.121	0.265
GENDER	-0.249	0.143	-1.733***	0.086
INCOME	-0.024	0.052	-0.461	0.646
MARRIAGE	-0.288	0.406	-0.710	0.479
EDUCATION	0.058	0.111	0.522	0.603
FINCOURSE	0.303	0.235	1.286	0.201
INVEST	-0.342	0.139	-2.467**	0.015

$R^2 = 21.4\%$ ,  $F$ -statistics = 2.58\*

**Notes:** \*Significant at 1% level (two-tailed); \*\*significant at 5% level (two-tailed); \*\*\*significant at 10% level (two-tailed)

**Table VI.**  
Regression result  
using the GMM  
procedure

Independent variables	Coefficients		<i>t</i> -statistics	<i>p</i> -value
	$\beta_i$	SE		
RISK_TOL	0.934	0.094	9.939*	0.000
AGE	0.076	0.067	1.141	0.256
GENDER	0.167	0.098	1.709***	0.089
INCOME	0.126	0.049	2.569**	0.011
MARRIAGE	-0.131	0.164	-0.796	0.428
FINCOURSE	-0.345	0.272	-1.268	0.207
INVEST	0.339	0.106	3.193*	0.002

$R^2 = 8.28\%$

**Notes:** \*Significant at 1% level (two-tailed); \*\*significant at 5% level (two-tailed); \*\*\*significant at 10% level (two-tailed)

## 6. Managerial implication and conclusion

This study pioneers the exploration of investors' behavior in post-Soviet Central Asian countries. We particularly focused on individual personality described in the BFF model. The study could have few implications for governments, policymakers and the financial industry. As governments of Central Asian countries are moving to capitalism and trying to develop capital markets, they could use the study findings to improve financial literacy programs. In Kazakhstan, the government has already established the Financial Services Academy to educate and create awareness among potential investors. The findings will help select and train the appropriate candidates for those programs. The results of this study imply that investment advisors should consider personal characteristics and individual risk tolerance, among other factors, when giving investment advice to private investors. Financial planners and advisors could look at

investors' personality traits to address the clients' financial needs and advice them about relevant financial services in an efficient manner. Also, our study confirms that investors will not behave rationally in all situations (Simon, 1955, 1976). Sometimes, they may show opportunistic or irrational behavior in the investment decision-making process. Therefore, governments should take effective measures to control such behavior; otherwise, the share market could be "bubbled up". Such inefficiency of the share market could create negative impressions among investors in this transition society, who do not have adequate knowledge about share market functioning (Maxfield, 2009; Xiao *et al.*, 2009). The study has several limitations. First, it was conducted only in one particular country, i.e. Kazakhstan. The generalization of the findings needs to be considered carefully. Second, our sample only comprises university students, and it does not fully represent all potential investor groups in Kazakhstan. Third, it looked only at personality traits. Other personal factors, such as family background, financial conditions and individual life experiences, could also have significant influence on their investment decisions. Fourth, our study overlooked social and cultural-level factors that could have some impact on investors' decision. Despite these limitations, the study provides valuable insight in understanding the relationships between personality traits and investment decisions in a transition economy context.

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