



The Mediating Effect of Financial Risk Tolerance on the Relationships between Instrumental Risk and Financial Risk-Taking Behaviour: A Study of Individual Investors

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Abstract

The study attempts to explore the unattended psychological influence called instrumental risk on individual investor's financial risk-taking behaviour. It further investigated the mediating effect of financial risk tolerance on the relationship between instrumental risk and financial risk-taking behaviour. Survey method was utilized to gather responses from 100 legitimate respondents using purposive sampling method. Data was analyzed using SPSS software package and to test the mediating relationship, SOBEL test was performed. The results exhibited significant positive relationship amid instrumental risk and financial risk tolerance. Additionally, financial risk tolerance is emphatically identified with financial risk-taking behaviour. So investment agencies or stock broking firms should particularly concentrate on psychological factors so as to enable the people to perform better and maintain a strategic distance from financial management in this way growing long haul having mutually benefit associations with them.

Keywords: Financial Risk Tolerance, Instrumental Risk, Financial Risk-Taking Behaviour

JEL Classification: G4

Paper Classification: Research Paper

Introduction

Do individuals act rationally when subjected to making risky financial choices? Different variables have been observed to be related with individual investors financial risk tolerance and risk-taking behaviour (Godall & Corney, 1990; Roszkowski, 1996). The attitude of an individual towards risk determine his financial risk tolerance. Specifically, it is described as a proportion of instability that an individual will recognize on his return on investment while endeavouring to make his/her decision related to finance (Grable & Lytton, 1999b; Grable, 2000; Hallahan et al., 2003; Faff, 2008).

In spite of the fact that until late, demographics have been broadly analyzed as determinant of financial risk tolerance and there exists a general accord among financial engineers and academic communists that socio-economics can be utilized as both differentiating and classifying factors among levels of investors risk tolerance categories. While other researchers have recognized that response to financial risk tolerance and financial risk-taking behaviour are consequence of both



cognitive and affective influences (Schunk & Betsch, 2006; Townsend, 2006; Wang, 2006), however the outcomes need consistency. Since, every individual has different psychological make-up, therefore his/her level of risk-tolerance differs from another, i.e. investment considered "risky" by one investor may not be considered risky or may be considered as less risky by another. Therefore, ascribing risk-tolerance categories to every investor accordingly has become an indispensable job of investment managers and advisors.

Risk tolerance is therefore, considered as one of the most misconstrued term among investment management and also proven to be a more complex psychological concept (Schwarz & Clore 1996; Bagozzi, Gopinath & Nyer, 1999; Schwartz & Ritov, 1999; Lerner & Keltner, 2000; Luomala & Laaksonen, 2000; Lerner, Small & Loewenstein 2004; Mellers & Slovic et al., 2004; Lerner, Han, & Keltner, 2007). In any case, there lies some unanswered inquiries regarding the determinants of financial risk tolerance. Little empirical research exists on the topic with such participants. Therefore, the reason for the study is to stretch out the current research to better comprehend the relationship among financial risk tolerance and the inclining factors.

Literature Review

Financial Risk Tolerance

Grable (2000) well-defined Financial Risk Tolerance (FRT) as, "the maximum amount of uncertainty an individual is willing to accept while making financial decision." A wide variety of researcher have been based on the similar definition (Hallahan, Faff, & McKenzie, 2003; Garrison & Gutter, 2010; Kourtidis, Sevic, & Chatzoglou, 2011). However, risk-tolerance, being a multi-dimensional concept, has been defined differently by different researchers. While Van de Venter, Michayluk, & Davey (2012) opined that financial risk tolerance is influenced not only by individual factors but also situational factors. This nature of these factors is dynamic. The results were in consensus with Roszkowski & Davey (2010). There were other researchers who reported that financial risk tolerance remains steady and does not changes (Van de Venter et al, 2012).

Financial risk tolerance has been a largely studied concept in relation with various demographic and socio-economic, psychological factors, especially in context of financial services discipline (Grable, 2008). There exist various theories, measurement tools and comprehensive view on other factors influencing financial risk tolerance (Sung & Hanna, 1996; Wang & Hanna, 1997; Grable & Lytton, 1998; Grable & Joo, 1999, 2000; Grable, 2000; Hallahan, Faff & McKenzie, 2003; Grable & Joo, 2004; Grable & Rozkowski, 2008; Ryack, 2011; Gibson, Michayluk, Van de Venter, 2013), but these studies lack consensus (Palsson, 1996). Also, Grable & Lytton (1999) concluded that demographical influences have limited ability and counting primarily on them would fail to accomplish the individual's objectives. Thus, the present research would examine the extent to which psychological factors other than the demographic factors help in predicting investor's financial risk tolerance and their risk-taking behaviour and the influence of financial risk tolerance as a mediating variable.

Financial Risk-taking Behaviour

General research and theoretical contributions dedicated to exploring the association among the determining factor of conduct appears to be very substantial. Indeed, within the field of personal finance, it is conceivable to discover several researches that reported psychosocial contacts with financial behaviour (McKenna, Hyllegard & Linder, 2003; Rha, Montalto, & Hanna, 2006; Stum, 2006) and socio-economic factors related to financial behaviour (Danes & Haberman, 2007).

A behaviour is either characterized as objective situated or volitional. If it is objective arranged, an individual will handle his/her financial situation in such a way that it would provide him/her a mechanism for attaining a definite goal which would influence his/her action. On the other hand, if it is volitional, money management tends to get influenced by his/her behavioural intents (Jaccard & Blanton, 2005). It is likely that variety of external factors influence a person's behaviour directly or indirectly (Grable et al., 1998).

There have been very limited studies that have struggled in exploring the association amid psychological factors and financial risk-taking behaviour. Krueger and Dickson (1994) concluded that psychological influences may assume a vital part in an individual's choice to engross in financial risk-taking behaviour.

Instrumental Risk

Instrumental risk is often associated with accomplishment and objective orientation and is identified with the more perplexing capacities in information processing (Ameriks J., Wranik, T. & Salovey, P., 2009). An individual who engages in instrumental risk-taking makes progress towards a long haul future benefit or advantage. It often comprises two traits namely, (1) urgency characterised by one's inability to control or adapt to driving forces counter to disagreeable feelings. The characteristic is the element of impulsiveness, most firmly connected to unruly gambling (Whiteside, Lynam, Miller & Reynolds, 2005), and (2) lack of deliberation also known to be premeditation characterised by one's tendency not to prolong action until rational thinking and planning can occur. The instrumental risk is a term used rarely for exploring its relationship with investment behaviour, therefore the purpose of the research is to recognize the association.

Proposed Research Framework and Hypotheses

To assess the relationships between the constructs, a quantitative and non-experimental study was undertaken. The conceptual framework and hypotheses have been founded upon the theoretical propositions.

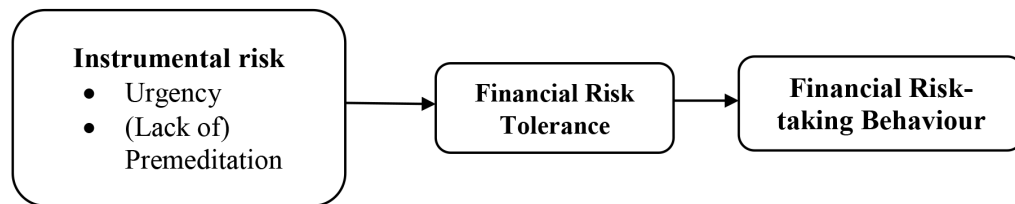


Figure 1: Conceptual Framework

The framework (in Figure 1) portrays financial risk-tolerance as the mediating variable amid the connection between instrumental risk and financial risk-taking behaviour;

H_1: There exists a positive association amid instrumental risk and financial risk tolerance.

H_2: A positive relationship exists between instrumental risk and financial risk-taking behaviour.

H_3: Financial risk-tolerance is positively linked to financial risk-taking behaviour.

H_4: The relationship amid Instrumental risk and financial risk-taking behaviour is mediated by financial risk-tolerance.

Methodology

An ordinary least squares (OLS) regression analysis was utilized to test statistical significance and furthermore, to decide the amount of variance elucidated in the model.

Respondents

Purposive sampling technique was employed to collect data and respondents were selected on the basis of convenience. A list of investors was obtained from the leading stock broking agencies operating in northern region of Uttar Pradesh and questionnaire was then e-mailed to them. Out of 126 responses received, 26 responses were rejected in pretesting phase. The final sample of the study comprised 100 individual investors.

Measurement Instruments

The following instruments were adapted as part of questionnaire designed to measure the constructs undertaken in the present study:

Financial Risk-taking Behaviour

The dependent variable comprised a summated score 4-item financial risk-taking behaviour evaluation instrument, like the one initially distributed by Grable et al. (2008).

Financial Risk Tolerance

Mediating variable was measured utilizing a 5-item risk-tolerance summated-rating scale in view of a measure developed by Grable and Joo (2004).

Instrumental Risk

The independent variable was adapted and modified from UPPS Impulsive Behaviour Scale developed by Whiteside & Lynam (2001). The present study utilized only two subscales namely "lack of premeditation" and "urgency" that relate to instrumental risk.

Results and Discussion

The results of the study as appearing in Table 1 show that most of respondents are male (63%) while just 37% are female; 52% of respondents are inside the age group 21–30 years. , 72% respondents hold private occupation and 44% fall in the income bracket of 2.1 Lakhs – 6 Lakhs with over 80% of respondents having investment experience of maximum 5 years.

Table 1: Descriptive Profile of Respondents

Variable	Frequency	Percent
Category		
Male	63	63%
Female	37	37%
Age		
21-30	52	52%
31-40	34	34%
41-50	6	6%

51-60	7	7%
61 or above	1	1%
Education		
School-level	2	2%
Graduation	32	32%
Post-graduation	66	66%
Marital Status		
Married	67	67%
Unmarried	33	33%
Occupation Type		
Private Sector	72	72%
Public Sector	9	9%
Self-employed	13	13%
Housewife	5	5%
Retired	1	1%
Experience in Investments		
< 5 years	80	80%
5 - 15 years	19	19%
>15 years	1	1%
Annual Income		
2 Lakhs or below	7	7%
2.1 Lakhs to 6 Lakhs	44	44%
6.1 Lakhs to 10 Lakhs	27	27%
10.1 Lakhs to 15 Lakhs	15	15%
15.1 Lakhs or above	7	7%

The result of the multiple regression analysis is presented in Table 2 beneath;

Table 2: Summary of Model 1

Model	Correlation (R)	Coeff. of Determination (R ²)	Adjusted R ²	S.E.	Change Statistics					Durbin-Watson
					R ² change	F change	Degree of freedom 1	Degree of freedom 2	Significance	
1	0.54a	0.30	0.28	2.60	0.296	20.35	2	97	0.00	1.99

a. Predictors: (Constant): FRT, Financial Risk Tolerance; INST_R, Instrumental Risk

b. Dependent Variable: FRB, Financial Risk-taking Behaviour

With respect to general model fit, taking a gander at Table 2 reveals that the coefficient of determination (R²) is 0.30. The results were consistent with Cohen (1998) and recommends that the contribution of each factor to the model is liberal.

Table 3: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	275.37	2	137.68	20.35	0.00b
Residual	656.27	97	6.77		
Total	931.64	99			

a. Dependent Variable: FRB, Financial Risk-taking Behaviour

b. Predictors: (Constant): FRT, Financial Risk Tolerance; INST_R, Instrumental Risk

Table 3 depicts that the regression fit is significant ($p < 0.00$). Multicollinearity was checked using variance inflation factor (VIF) whose value must not exceed five (Hair, Black, and Babin, 2010).

Table 4: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	2.84	1.84		1.54	0.13		
INST_R	0.11	0.05	0.18	2.08	0.04	0.95	1.05
FRT	0.35	0.06	0.48	5.44	0.00	0.95	1.05

Notes: Dependent Variable: FRB, Financial risk-taking Behaviour

Table 4 above shows, the value for each variable was within the threshold limit, thus ensuring that collinearity was not an issue. Furthermore, to demonstrate autocorrelation, the Durbin-Watson test was employed, the value was within the range 1.5– 2.5, revealing that there exists no autocorrelation. To sum up, the model fit was acceptable.

Moreover, to evaluate the significance of the hypothesized relationship, the t-statistics and p-value was determined for each relationship (refer, Table 5).

Table 5: Hypotheses Testing

Variables	β	Std. Error	t	Sig.	Decision
INST_R -> FRT	0.18	0.08	2.19	0.03	Accepted
INST_R -> FRB	0.17	0.06	2.93	0.00	Accepted
FRT -> FRB	0.38	0.06	5.93	0.00	Accepted

Notes: FRT: Financial Risk Tolerance, INST_R: Instrumental risk, FRB: Financial risk-taking behaviour.

The relationship between Financial Risk Tolerance (FRT) and Financial Risk-taking Behaviour was found to be statistically significant ($p < 0.05$). Financial risk tolerance assumes an imperative part in determining financial risk-taking behaviour of individuals. Also, it is noteworthy that a significant relationship exists amid instrumental risk and financial risk-tolerance and also amid instrumental risk and financial risk-taking behaviour. In this way, it can be inferred that hypotheses H_1 , H_2 and H_3 are validated.

Mediation Analysis

To demonstrate if the relationship amid instrumental risk and financial risk-taking behaviour is mediated by financial risk tolerance, the mediation test as proposed by Hayes (2008) was employed. He demonstrated that the direct and indirect effects of independent variable were derived from two linear models.

i. M is estimated from X

$$M = i_M + a_1 X + e_M$$

ii. Y is estimated from both X and M

$$Y = i_Y + c_1' X + b_1 M + e_Y$$

where, c_1' determines the direct effect of X on Y

$a_1 b_1$ determines the indirect effect of X on Y through X

b_1 determines the effect of M on Y while controlling for X

The total effect of X on Y is estimated using equation;

$$Y = i_Y + c_1 X + e_Y$$

where, c_1 which is equal to $c_1' + a_1 b_1$ determines the total effect.

In simplicity, the indirect effect of X on Y through M is equal to the difference between the total and direct effects on X, i.e.,

$$a_1 b_1 = c_1 - c_1'$$

A simple mediation model can be seen in Figure 2. Bootstrapping method was employed over 5000 sub-samples at 95% confidence level to test the significance of coefficients using PROCESS. SPSS developed by Hayes (refer Table 6, 7, 8, 9, and 10).

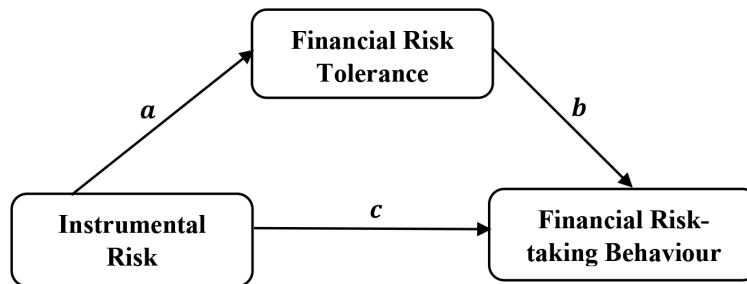


Figure 2: Mediation Model (Author's Compilation)

Table 6: IV to M (a)

Effect	S.E.	t-statistic	p-value	LLCI	ULCI
0.18	0.08	2.19	0.03	0.02	0.34

Notes: Effect, Unstandardized Path Coefficients; S.E., Standard Error; LLCI, Lower Limit Confidence Interval; ULCI, Upper Limit Confidence Interval

Table 7: M to DV (b)

Effect	S.E.	t-statistic	p-value	LLCI	ULCI
0.35	0.06	5.44	0.00	0.22	0.48

Notes: Effect, Unstandardized Path Coefficients; S.E., Standard Error; LLCI, Lower Limit Confidence Interval; ULCI, Upper Limit Confidence Interval

Table 8: Total effect of X on Y (c)

Effect	S.E.	t-statistic	p-value	LLCI	ULCI
0.17	0.06	2.93	0.00	0.06	0.29

Notes: Effect, Unstandardized Path Coefficients; S.E., Standard Error; LLCI, Lower Limit Confidence Interval; ULCI, Upper Limit Confidence Interval

Table 9: Direct effect of X on Y (c')

Effect	S.E.	t-statistic	p-value	LLCI	ULCI
0.11	0.05	2.08	0.04	0.00	0.22

Notes: Effect, Unstandardized Path Coefficients; S.E., Standard Error; LLCI, Lower Limit Confidence Interval; ULCI, Upper Limit Confidence Interval

Table 10: Indirect effect of X on Y

Effect	BootS.E.	BootLLCI	BootULCI
0.06	0.04	0.00	0.15

Notes: BootLLCI; lower confidence interval and BootULCI, upper confidence intervals (as generated through bootstrapping method)

Further, to confirm the mediation SOBEL test (Refer, Table 11) was employed and the result was found significant. Hence, Hypothesis 4 is accepted.

Table 11: Normal theory tests (Sobel Test) for indirect effect

Effect	S.E.	t-statistics	p-value
0.06	0.03	2.00	0.05

Notes: Effect, Unstandardized Path Coefficients; S.E., Standard Error.

Moreover, to determine the strength of mediation, variance accounted factor (VAF) was calculated. VAF determines the size of indirect effect compared to direct effect. A VAF value of less than 20% means absence of mediation or no mediation; value between 20%-80% signifies partial mediation; and value above 80% accounts for full mediation. Therefore, it can be concluded that Financial Risk Tolerance (FRT) partially mediates the relationship between Instrumental Risk and Financial Risk-taking Behaviour (VAF = 36.2%; refer Table 12 below).

Table 12: Mediation Analysis

Path	Direct Effect	Indirect Effect	Total Effect	VAF	Decision
INST_R->FRT -> FRB	0.11	0.06	0.17	36.2%	Partial Mediation

Notes: VAF, Variance Accounted Factor = Indirect Effect/Total Effect

Conclusion and Implications

Research on Financial Risk Tolerance and Risk-taking behaviour has become an imperative field in the field of behavioural finance to beat the evident shortage of financial management skills faced by individuals at large. Considering the significance of psychological variables in determining the investor's financial risk tolerance and their risk-taking behaviour, will permit the financial counsellors to formulate apt strategies for individuals according to their risk-appetite. While the prior researches have concentrated just on demographical impacts, the present study seeks to explain that individual's financial risk-tolerance is influenced by a complex relationship between instrumental risk and financial risk-taking behaviour of individuals. The results obtained

from the study can be utilized by investment agencies to develop strategies to help individual investors from going into troublesome investments.

Limitations and Future Scope

Attributable to restrictions of time and small sample size, generalizations from the present study is difficult to predict, in spite of this constraint, this exploration gives an underlying examination on psychological variables having an effect on investor's financial risk tolerance and financial risk-taking behaviour. Further research is proposed to recreate this study with a bigger and among varied population.

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