Quantification of Risk Appetite for Young Professionals: An Empirical Study

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Abstract

The debate over quantification of risk appetite of investor keeps evolving. As the modern portfolio theory gained prominence, the area has grabbed researchers' interest world over resulting into many significant contributions made so far. However, this area needs exploration in Indian context to add to the existing body of knowledge.

This paper is an attempt to contribute in this direction by developing the instrument for quantification of risk appetite. The final outcome of the study is a questionnaire with twelve items and four factors; 1. Psychological Perspective, 2.Financial Stability Perspective, 3.Societal Perspective, 4.Tendency to Panic. The researchers used Factor Analysis (EFA) to surface dominant factors attributable to quantification of risk appetite. The methodological framework included identification of factors by using anti-image correlations and Varimax Rotated Component Matrix. The sample of 160 young professionals from Rajkot and Ahmedabad were found adequate as per Kaiser-Meyer-Olkin Measure of Sampling Adequacy. As the study pertains to quantification of complex behavioral aspect, Chronbach's Alpha of fifty percent was considered satisfactory.

The researchers believe that the study will predominantly facilitate Portfolio Management Services (PMS) to categorize investors based on their risk appetite. This would also be of relevance for Asset Management Companies (AMCs) to structure the schemes according to the risk profile of the investors.

Key Words: *Portfolio Management Services, Risk Appetite, Behavioral Finance, Quantification of Risk, Attributes.*

Introduction

With the increasing importance of wealth management in India, many unsophisticated investors need to make sound investment decisions. Understanding risk tolerance has always attracted financial service providers and consumers. The tendency towards risky investment alternative and hence risk tolerance is escalating. Snelbecker, Roszkowski, & Cutler (1990) cited that risk tolerance is an important factor that influences a wide range of personal financial decisions. Understanding risk and risk tolerance is essential in apt portfolio management. Choosing a portfolio not consistent with risk tolerance capacity may result in investor disappointment.

Despite its importance in the financial services industry; there remain some unresolved questions with respect to the "determinants" of risk tolerance. Factors like homogeneity of risk amongst investors, investment and age, home country bias of investors, investors, and wealth etc. have been researched. In spite of the fact that a number of factors have been proposed and tested, a brief survey of the results reveals a distinct lack of consensus. As Haliassos and Bertaut (1995) inferred, "the current

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body of theoretical literature does not adequately describe the behavior of individual investors". According to risk-tolerance researchers (e.g. Droms, 1988) and financial planning practitioners (e.g. Opiela, 1996), the ongoing problem of personal finance is absence of well documented and accepted instrument for risk assessment. However, considerable attempts are made to address this research gap, but systematic efforts are yet to be put, especially in Indian context with well diversified individual profiling.

In recent years, investment managers, portfolio managers, financial planner and researchers have taken an improved interest in understanding investor risk tolerance. Much of this interest has evolved because of advances in the conceptualization of investment management models. Modern investment decision making models require investment managers to use, at a minimum, four factors as inputs into the development of financial and investment plans. These inputs include investors': (a) goals, (b) time horizon, (c) financial stability, and (d) risk tolerance (Garman & Forgue, 1997; Hallman & Rosenbloom, 1987; Trone, Allbright & Taylor, 1996).

Risk tolerance and risk appetite are seemingly similar phrases. Researchers, for the purpose of this study present different view points for similar phenomena. Risk tolerance is individual's capacity to accept loss on the event of market crash (i.e. the point where investor says, "enough"). Risk appetite is individual's willingness to take risk with anticipation of generating superior returns. This study is designed to address the phenomenon of risk appetite. However, the studies measuring risk tolerance are also of immense help for this study.

Thus quantification of risk appetite becomes a key importance. The multi-dimensional nature of risk appetite makes it a challenge to measure. Although the importance of accurately assessing the financial risk and its appetite is well documented, the practice remains not so accurate due to the very subjective nature of risk taking. The purpose of this study is to present research findings that attempts to quantify risk appetite which would facilitate professional portfolio managers for decision making with respect to allocation in risky assets vis-à-vis risk profile of the investors.

Literature Review

Majority of the literature review encompasses works of authors who have surfaced various dimensions pertaining to risk tolerance, risk appetite and various investment decisions.

Kogan and Wallach (1964) designed the questionnaire to assess risk preferences through the use of hypothetical scenarios. Twelve items using an open-response format, it stated that risk tolerance is the willingness of an individual to engage in a behavior where there is a desirable goal but attainment of the goal is uncertain and accompanied by the possibility of loss.

Cutler (1995) classified as "myth" the idea that financial risk tolerance is a simple one-dimensional attribute. According to Cordell (2001), risk tolerance is multi-faceted. It is a function of propensity, attitude, capacity, and knowledge. Of these, attitude and capacity are most significant.

Using a sample of white collar clerical 220 workers Grable & Joo (2000) determined that financial knowledge, income, education, ethnic background, financial solvency, number of dependency & home township can be used to predict a personal financial risk tolerance.

Demographics play important role in determining risk appetite. Studies have revealed that women are more conservative than men, and this difference is attributed to a personality trait in men referred to as "thrill seeker or sensation seeker" (Roszkowski, Snelbecker & Leimberg, 1993)

Hanna, Gutter & Fan (2001) mentioned that there are at least four methods of measuring risk tolerance: asking about investment choices, asking a combination of investment and subjective questions, assessing actual behavior, and asking hypothetical questions with carefully specified scenarios.

Weber, Blais, and Betz (2002) conceptualized a person's attitude toward taking financial risks to include risk perception and attitude toward perceived risk.

Corter & Chen (2006) investigated a new instrument designed to assess investment risk tolerance, the Risk Tolerance Questionnaire (RTQ). The study showed that RTQ scores were positively correlated with scores on two other investment risk measures, but were not correlated with a measure of sensation-seeking which was in line with Zuckerman (1994) suggesting that investment risk tolerance is not explainable by a general cross-domain appetite for risk.

Sulaiman (2012) in his paper has contradicted the belief that financial risk tolerance of individual investors decreases with their age. He has taken several demographic factors like marital status, formal education, income etc. to measure the risk tolerance.

Sreekumar and Ladha (2014) described key non economic investor characteristics that affect risk tolerance. They inferred that collectivism, religiosity, and environment attitude are the key attributes of Indian investors that influence their pursuit of non-economic investment goals.

Cooper, Kingyens, and Paradi (2014) characterized risk by its four distinct elements; propensity, attitude, capacity, and knowledge. Over 180 individuals were surveyed and their responses were analyzed to confer results that the multidimensionality of risk must be considered for complete assessment of risk tolerance.

Geetha and Vimla (2014) studied the association between demographic characteristics and risk taking capacity of the investors. They proved no significant relationship between gender and risk taking capacity of the respondents and significant relationship between educational qualification and risk taking capacity.

Kannadhasan (2015) in his paper has classified 778 retail investors with various investment experiences in terms of financial risk tolerance and risk taking behavior. He has used the demographic factors viz., gender, age, marital status, income, occupation, and education resulting in terms of financial risk tolerance and risk taking behaviour.

Research Methodology

Research objectives	**Primary:** To facilitate portfolio managers to decide the fund allocation based on risk appetite of young professionals. **Secondary:** Quantification of Risk Appetite of young professional.
Data collection	Primary
Criteria for sample selection	Questionnaire was sent to only those respondents who were expected to be of less than 45 years of age and minimum graduate. However, responses received not satisfying these criteria were removed from data analysis.
Research design	Sample includes investors from the region of Ahmadabad and Rajkot. (Respondents are young working professionals and investors). Sampling size : 160 investors Sampling method: Convenient and Snowball Sampling Instrument used for data analysis: Factor Analysis (EFA) Rationale for EFA: Research intended to determine the number of latent constructs underlying a set of items that defined risk quantification. Being a variable reduction technique, research aimed at finding the factors affecting the choice of investment depending on the risk.

Table 1: Demographic Profile of Respondents

Age Group	20-30		31-45		**Total**
Responses	91		69		160
Education	Less than Graduate	Graduate	Post Graduate	More than Post Graduate	
Responses	0	13	96	51	160
Monthly Income	Less than 25000	between 26000 to 50000	between 51000 to 100000	greater than 100000	
Responses	35	69	27	29	160
No. of Dependent Family Members	Less than 2	2 to 3	4	more than 4	
Responses	64	53	32	11	160
Residence	Ahmedabad		Rajkot		
	91		69		160

Data Analysis and Interpretation

Pertaining to the objective of quantification of risk appetite of the young professionals, the detailed questionnaire was constructed. The researchers defined young investors with the age of less than 45 years. The respondents were selected based on this criterion. However, further bifurcation is also made where 91 respondents were found to be in the age range of 20-30 years and 69 respondents were from the age range of 31-45 years. This bifurcation was made to extend the scope of study in future. By professional, researchers defined minimum graduate as their qualification. Table – 1 exhibits the demographic profile of the respondents.

Factor analysis was used for data reduction and factorization. The process pursued for scale development was as follows: Initially the tool (questionnaire) of twenty eight items was constructed to quantify the risk appetite of the investors. Scores were generated for all the items in the questionnaire to perform appropriate analysis. The factor analysis was applied on the responses received. Applying the criterion of fifty percent anti-image correlation, the items with lower correlations were removed from the tool. The items with cross loading in rotated component matrix were also deleted from the tool.

As the researchers are keen on producing a questionnaire with comparatively higher accuracy and reliability, the Cronbach Alpha was used for reliability test. In that process the items which were making the instrument less reliable were removed to make a final questionnaire with comparatively better reliability and accuracy. Since the study intends to map the qualitative phenomenon of risk appetite, fifty percent reliability was considered to be quite satisfactory.

The final instrument for quantification of risk appetite was a questionnaire with twelve questions bifurcated in four factors.

Table 2: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.668
Bartlett's Test of Sphericity	Approx. Chi-Square	115.192
	Sig.	.000

The researchers attempted to ensure the heterogeneity of the samples included while having the study. The sampling adequacy of 66.8 percent was found satisfactory considering the heterogeneity of the respondents. The Bartlett's Test of Sphericity was used to prove the presence of correlations among variables. Null hypothesis was rejected to arrive at a conclusion of presence of correlations among variables.

The VARIMAX – rotated component analysis factor matrix is shown in Table – 2. The total amount of variance extracted was 58.6 percent which explains the level of confidence of the results.

Factor 1: Psychological Perspective

Psychological perspective for risk measures the readiness to sacrifice for investment. This includes four variables; Variable 17 (0.860), Variable 11 (0.582), Variable 27 (0.507) and Variable 2 (0.501). Investment can also be synonymic with the phrase "postponement of consumption" which requires an immediate sacrifice. Its general belief that the risk lover investor will be ready to accept more postponement and risk averse investor will be having a limited tendency for postponement.

Factor 2: Financial Stability Perspective

Financial stability perspective attempts to measure the inclination of investor for financial stability. This factor includes four variables; Variable 6 (0.685), Variable 19 (0.662), Variable 22 (0.602) and Variable 12 (0.593). The foremost objective of any investment is always safety of principal. The investor more inclined for financial stability will be more concerned about risk (risk averse investors). On the flip side, risk lover will not be so much concerned about financial stability.

Factor 3: Societal Perspective

Societal perspective represents the investors' decision making based on their thinking from societal view point. This factor includes two variables; Variable 1 (0.860) and Variable 3 (0.758). Several times, people tend to take decisions

Table 3: VARIMAX Rotated Component Matrix

Rotated Component Matrix*					
	Component				
	Factor 1	Factor 2	Factor 3	Factor 4	Communalities
VAR00017	.860				.753
VAR00011	.582				.643
VAR00027	.507				.424
VAR00002	.501				.355
VAR00006		.685			.578
VAR00019		.662			.586
VAR00022		.602			.401
VAR00012		.593			.552
VAR00001			.860		.778
VAR00003			.758		.693
VAR00026				.753	.663
VAR00024				.747	.602
					Total
Eigen Values	2.824	1.582	1.421	1.200	7.027
% of Variance	23.531	13.184	11.845	9.997	58.557
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					

* Factor loadings less than 0.50 have not been displayed

based on their comfort zone in society. This types of investors are risk averse investors. Investors who do not bother about such societal perspective are risk lover investors.

Factor 4: Tendency to Panic

Tendency to panic elaborates the response of investor while facing loss. This includes two variables; Variable 26 (0.753) and Variable 24 (0.747). Panic is a perfect psychological factor resulting into erratic decision out of indecisive situation. It was observed several times that investors tend to lose potential gains in tendency of panic. This kind of investors are risk averse while risk lover investors would stay calm at the time of panic or create more long positions lower down the average cost of investment.

Table 4: Reliability Statistics

Reliability Statistics	
	Cronbach's Alpha
Factor 1	.597
Factor 2	.549
Factor 3	.586
Factor 4	.520

The study pertains to the area of behavioral finance where the individual's responses will be based on so many identifiable and non identifiable factors. The researchers set the target of having 50 percent reliability as satisfactory. All four factors were checked for acceptable and satisfactory reliability scores of more than 50 percent.

The final questionnaire consists of twelve items having total score of 47. Based on the responses that we have received and the mathematical tools like, average, standard deviation, minimum and maximum we present the summary for the scoring of risk appetite in Table – 5.

Table 5: Score of Risk Appetite and Fund Allocation

Score of Risk Appetite	Percentage of fund allocation in risky assets
15-20	20%-35%
21-25	35%-50%
26-30	50%-60%
31-35	60%-70%
35-40	70%-80%
40 and above	More than 80%

Conclusion

One of the most important decisions of portfolio manager is to bifurcate the funds among risky and risk free assets. This study brings forth the instrument for quantifying risk appetite of the investor. We strongly believe that the questionnaire designed as the outcome of this study will help portfolio managers to take this decision based on risk appetite of their clients.However, the researchers are well aware with the fact that the sample size of the study includes respondents from Rajkot and Ahmedabad only. Simultaneously it included young professional respondents only. But this instrument for quantification of risk appetite is open for verification and validation with other investors also. The researchers are keen on extending this study in future in line with extending the scope of the study.

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