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A Study on Risk Tolerance and Risk Capacity of Post Graduate Students

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ABSTRACT

The idea of risk tolerance has been investigated by many scholars across the globe, and the existing understanding on risk aversion for over several years has been that the majority investors have a preference to lower the risk to attain a decent return. This study measures the variation between risk tolerance and the capacity of investment risk of an individual. A structured questionnaire was given to 100 Postgraduate students. It was assumed that for a good number respondents, the risk leeway will be inferior than the individual's risk taking ability. It was additionally assumed that male respondents will have superior liquidity requirements, desired rate of return and superior risk tolerance when compared to female, and that superior risk acceptance will be found amid students who have a higher family income.

Keywords: Risk Tolerance, Risk Capacity, Risk aversion.

1. INTRODUCTION

All investor must pogy out with a number of types of danger in making his / her choice. An important constituent of financial premise is the concept of risk tolerance; which matters a lot, many people, try to curtail the risk for a given return, or on the contrary, make the most of the return for a given risk (Gitman & Joehnk, 2005).

People diverge considerably in the way they take risk, for many reasons including financial and emotional (Gollier & Pratt, 1996). These divergences have been classified into risk tolerance and risk capacity. These both these terms have been often used transposable in many a occasions. A short time ago, "Kitkes (2006) and few others have confirmed the need to describe and quantify these term with a view to obtain a useful

investor profile”. Cordell (2001) developed a tool called “RiskPACK”, a tool to identify and compute different workings of an individual’s risk attitude. He defined four constituents: Attitude, Propensity, Knowledge, and Capacity. Based on his supplementary investigations, later have recommended that risk might be analysed in two magnitudes, risk capacity and risk tolerance (Cordell, 2002).

Risk Capacity can be found out objectively, based on the person’s income, old age, financial steadiness, dependent family members and related constituent. Risk Tolerance is an attitudinal average, which is subjective. A cluster of individual may have equal incomes, same age, etc, and may have akin mental ability towards risk. But, it would not be amazing to find that one of them could tolerate higher degree of risk, despite the law of similarity in some conditions. As narrated by Grabel et.al, “Risk capacity is more quantitatively measurable; risk tolerance, less so. This becomes more of an issue when trying to step both these factors at the same time (Roszkowski, Davey & Grable, 2005)”.

Measuring Tolerance and Capacity

“Different Risk tolerance tools have been used since their introduction in the mid 1980’s (Droms & Strauss, 2003)”. However, many examiners doubt whether these tools provide a fine quantification of what these are invented to measure. Yook and Everett (2003) establishes that “there were contradictory results from the same set of investors”. Furthermore, Bouchey (2004) contended that “many of the questions found on such questionnaires were actually better measures of asset allocation as contrasting to true measures of risk tolerance”. Roszkowski and others pointed out (Roszkowski & Snelbecker, 1989) the complexities in many of these instruments in current day use and recommended a method for enhancing them.

2. METHODOLOGY

The instrument chosen for the study contains around twenty questions. A few of them are intended to quantify the capacity. These consist of questions about age, job security, number of people in the family, years to retire, etc. It also includes several questions relating to risk tolerance. These type of questions are expected to measure an sensitive reaction in making investment decisions, amount of concern about loss, opinions of others, etc. This instrument was selected as it merges both tolerance and capacity. In that way, there can be a direct evaluation between an individual’s capacity and tolerance of risk.

The validity of the instrument was tested by relating the questions with earlier authenticated tools of capacity and tolerance of risk (Fina Metrica, 2007). Reliability of the tool was confirmed by comparing distinct administration of the same with a good time interval and found to have the same results.

The selected tool was administered to 100 students. The study had three groups of students. Group 1 - MBA Students, Group - 2 MCA students and Group – 3 M. Tech Students. These different groups were preferred to represent different levels of knowledge on financial theories. The instrument was handed over to the students by a team, who explained and clarified the queries for the precision of instructions. The completed instrument were then composed and the analysis was performed.

Risk Tolerance Score

A Risk tolerance score was developed and the respondents were classified into various risk categories as follows:

Table 1
Risk Tolerance classification & their scores

<i>Profile</i>	<i>Risk score</i>
Conservative Investor	9-13
Cautious Investor	14-18
Moderately risky Investor	19-23
Balanced Investor	24-28
Assertive/Aggressive Investor	> 29

3. HYPOTHESES

The risk aversion found in most of the investment theories presumes that majority individuals will take minimum risk for a given return percentage. This has led to a hypothesis that a large number of respondent's risk tolerance is inferior than risk capacities (Gitman & Joehnk, 2005). In other words, most people can cost-effectively deal with higher financial risk than they are psychologically prepared to take (Nofsinger, 2005). In line with the same situation the foremost hypothesis intended to be tested was:

H1: Most of the individuals will have lesser tolerance of risk (RT) than risk capacity (RC).

In all probability, the more the knowledge an investor is the more intelligent decision he/she can make. This is applicable to managing funds too, as learners understand more about the mechanism of risk, they are uncovered to the methods for evaluating risk and return, they take a better investment decisions. Hence, our subsequent hypothesis is set as:

H2: The distinction between RC and RT will be highest in Non-Engineering students than in Engineering Students.

A large amount has been documented about various investment strategies preferred by male and female. Nofsinger (2005), found male to be more confident than female on investment decisions. Given that such overconfidence describe more about risk tolerance than to capacity, the third and fourth hypotheses were formulated as:

H3: Across all variables, viz., liquidity, desired rate of return and attitude towards risk, the male will demonstrate a higher requirement for liquidity, desired rate and risk tolerance female respondents.

H4: Across all variables as given above, the high income earners will show a different results when compared with low income earners.

4. ANALYSIS AND RESULTS

Risk Attitude Score of the Respondents

Based on the classification given in Table 1, Table 2 depicts the number of respondents falling into each category of risk tolerance class.

From Table 2, it can be observed that 50 respondents were having a score of 19 – 23, and were found to be moderately risky investors. 28 respondents had a score of 14 - 18 and considered as Cautious investors. 17 of them Scored 24 - 28 and were categorized as Balanced investors. On contrary to the expectations,

only 4 of the students were having a score of 9 - 13 who were categorized as Conservative investors. Only 1 respondent was found to be an aggressive investor.

Table 2
Risk Tolerance Classification of respondents

<i>Profile</i>	<i>Risk Score</i>	<i>No. of Respondents</i>
Conservative Investor	9-13	4
Cautious Investor	14-18	28
Moderately risky Investor	19-23	50
Balanced Investor	24-28	17
Assertive/Aggressive Investor	> 29-33	1

Here we came to a conclusion that 50% of the students were moderately risky investors based on their risk attitude.

Demographic Profile

Table 3
Demographic Analysis

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Family Income	< ₹5 Lakhs	52	52	52	52
	₹5 - ₹10 Lakhs	26	26	26	78
	₹10 - ₹15 Lakhs	17	17	17	95
	> ₹15 Lakhs	5	5	5	100
Place of Living	Trichy	24	24	24	24
	Thanjavur	34	34	34	58
	Kumbakonam	20	20	20	78
	Others	22	22	22	100
Education	Engineering	56	56	56	56
	Non - Engineering	44	44	44	100
Gender	Male	54	54	54	54
	Female	46	46	46	100
No. of Family Members	2 Members	1	1	1	1
	3 Members	28	28	28	29
	4 Members	50	50	50	79
	5 Members	16	16	16	95
	6 Members	5	5	5	100

Table 3 and 4 gives the demographic profile of the respondents and their descriptive statistical information. From Table 3, it can be inferred that 78% of the respondents were having a household family income upto ₹10 Lakhs. 22% of the respondents were falling in the income group of ₹10 Lakhs to ₹15 Lakhs. Almost equal number of respondents were from Thanjavur, Trichy and Kumbakonam. 22% of the respondents were found to be from other areas of Tamil nadu, viz., Chennai, Madurai, Erode, etc. 56% of

the respondents were having a Engineering back ground and 44% were from non-engineering back ground. Almost equal number of respondents were from two genders, Male – 53% and female 47%. Almost 80% of the respondents were having up to 4 members in their family and 20% had 5 members or 6 members in their family. Table 4 gives Descriptive statistics of the demographic factors.

Table 4
Descriptive Statistics of Demography

<i>Demographic Factors</i>	<i>Std. Deviation</i>	<i>Variance</i>	<i>Skewness</i>	<i>Kurtosis</i>
Family Income	0.91425	0.836	0.926	-0.233
Place of Living	1.08246	1.172	0.215	-1.218
Education	0.49889	0.249	0.245	-1.98
Gender	0.50161	0.252	0.122	-2.026
No. of Family Members	0.8278	0.685	0.511	0.195

5. RESULTS

Some of the surveys were unusable, either because of several unanswered questions, or some of them chose multiple answers to a single question, or a respondent gave in an answer which was not in the given options.

The residual 100 responses were entered in SPSS and the resulting RCand RT scores were matched to the respondents.

Hypothesis 1: Of the 100 samples, 15% of the respondents were having RC scores (RCS) superior than Risk Tolerance score (RTS). In 6 cases, the RCS and RTS were the same. Of the remaining 79% had RTS higher than RTC. The mean difference among RCS and RTS was 5.99, with a deviation of 4.27. A one-way ANOVA test was performed resulting in an F of 105.6, presenting a noteworthy difference between the RTS & RTC. Thus, H1 was rejected, and its reverse was found to be factual for this sample of respondents.

Table 5
Risk Capacity and Risk Tolerance Scores

<i>No. of Respondents</i>	<i>Ave. RCS</i>	<i>Ave. RTS</i>
15	30.82	26.05
6	26.78	26.73
79	29.22	32.77

Hypothesis 2: H2: The differences between RCS and RTS will be Superior in Group One (Non-Engineering students) than in Group Two (Engineering Students).

Rearranging data with the education set facilitate the testing of H2. Group I – Non-Engineering Students - were expected to illustrate the maximum difference between RTS and RCS, while Group II - Engineering students were likely to show the lowest.

Once again the test failed to support H2. The mean disparity between RCS and RTS in Group I was 4.03 points. Group II's average difference was lesser, dropping to 3.47. ANOVA test established that the differences ($F(2,155) = 0.07, p > .05$) were insignificant.

Table 6
ANOVA Test for Risk Capacity & Risk Tolerance

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
RCS	100	2719	27.19	12.78
RTS	100	3115	31.15`	11.67
ANOVA				
Source of Variation	SS	df	MS	F
Between Groups	1302.05	1	1302.05	105.60
Within Groups	3859.29	313	12.33	
Total	5161.34	314		
Source of Variation	P-value	F crit		
Between Groups	0.00	3.87		
Within Groups				
Total				

Hypotheses 3 and 4: To end with, H3 and H4 were tested after arranging the data according to gender and level of family income respectively. Across the groups, it was assumed that RTS of male would be higher than that of female's. But the results show an average male RTS of 32.8, somewhat higher than the average female RTS of 28.07. The t factor was 1.56 with a $p = 0.001$ ($\alpha = 0.05$). This would indicate H3 could be accepted.

It was also hypothesized that across all variables, viz., liquidity, desired rate of return and attitude towards risk, the male will show a higher requirement for liquidity, desired rate and risk tolerance female respondents. Chi-square analysis rejects all these variables and can be said that irrespective of the gender the liquidity requirement (Chi-sqaure – 0.497), desired rate of return (Chi-sqaure – 0.965) and attitude towards risk (Chi-sqaure – 0.412) are alike among men and women to this sample.

Table 7
Gender & Liquidity Requirement Analysis

		<i>Liquidity Requirement</i>				<i>Total</i>
		<i>< 1 Year</i>	<i>1 - 3 Years</i>	<i>3 - 5 Years</i>	<i>> 5 Years</i>	
Gender	Male	17	20	7	9	53
	Female	18	13	14	2	47
Total		35	33	21	11	100

Table 8
Chi-Square Tests –
Gender & Liquidity Requirements

	<i>Value</i>	<i>Df</i>	<i>Asymptotic Significance (2-sided)</i>
Pearson Chi-Square	7.970 ^a	3	.047
Likelihood Ratio	8.361	3	.039
Linear-by-Linear Association	.565	1	.452
N of Valid Cases	100		

^a0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.17.

Table 9
Gender & Desired Rate of Return Analysis

		<i>Desired Rate of Return</i>			<i>Total</i>
		<i>< 5%</i>	<i>5% - 10%</i>	<i>> 10%</i>	
Gender	Male	17	19	17	53
	Female	14	17	16	47
Total		31	36	33	100

Table 10
**Chi-Square Test-
Gender & Desired Rate of Return**

	<i>Value</i>	<i>Df</i>	<i>Asymptotic Significance (2-sided)</i>
Pearson Chi-Square	.072 ^a	2	.965
Likelihood Ratio	.072	2	.965
Linear-by-Linear Association	.070	1	.792
N of Valid Cases	100		

^a0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.57.

Table 10
Gender & Attitude To Risk Analysis

		<i>Attitude to Risk</i>				<i>Total</i>
		<i>Safety of Capital</i>	<i>Meets Current Requirement</i>	<i>Accept some fluctuation</i>	<i>Accept high degree of Risk</i>	
Gender	Male	3	13	25	12	53
	Female	4	17	15	11	47
Total		7	30	40	23	100

Table 11
Chi- Square Test Gender & Attitude to Risk

	<i>Value</i>	<i>Df</i>	<i>Asymptotic Significance (2-sided)</i>
Pearson Chi-Square	2.870 ^a	3	.412
Likelihood Ratio	2.888	3	.409
Linear-by-Linear Association	.885	1	.347
N of Valid Cases	100		

^a2 cells (25.0%) have expected count less than 5. The minimum expected count is 3.29.

H4: Across all variables as given above, the high income earners will show a different results when compared with low income earners. In the income category there were differences in the group, who were earning more. High income earning investors were having a high risk tolerance than the other groups and it was proved with chi-square score of 0.032.

Table 12
Family Income & Liquidity Requirement Analysis

		<i>Liquidity Requirement</i>				<i>Total</i>
		<i>< 1 Year</i>	<i>1 - 3 Years</i>	<i>3 - 5 Years</i>	<i>> 5 Years</i>	
Family Income	< ₹5 Lakhs	19	15	12	6	52
	₹5 - ₹10 Lakhs	9	10	5	2	26
	₹10 - ₹15 Lakhs	6	5	3	3	17
	> ₹15 Lakhs	1	3	1	0	5
Total		35	33	21	11	100

Table 13
Chi-Square Test-
Family Income & Liquidity Requirement Analysis

	<i>Value</i>	<i>Df</i>	<i>Asymptotic Significance (2-sided)</i>
Pearson Chi-Square	3.780 ^a	9	.925
Likelihood Ratio	4.101	9	.905
Linear-by-Linear Association	.000	1	1.000
N of Valid Cases	100		

^a7 cells (43.8%) have expected count less than 5. The minimum expected count is .55.

Table 14
Family Income & Desired Rate of Return Analysis

		<i>Desired Rate of Return</i>			<i>Total</i>
		<i>< 5%</i>	<i>5% - 10%</i>	<i>> 10%</i>	
Family Income	<₹5 Lakhs	10	21	21	52
	₹5 - ₹10 Lakhs	11	8	7	26
	₹10 - ₹15 Lakhs	8	5	4	17
	> ₹15 Lakhs	2	2	1	5
Total		31	36	33	100

Table 15
Chi-Square Test-
Family Income & Desired Rate of Return

	<i>Value</i>	<i>Df</i>	<i>Asymptotic Significance (2-sided)</i>
Pearson Chi-Square	7.512 ^a	6	.276
Likelihood Ratio	7.630	6	.266
Linear-by-Linear Association	5.092	1	.024
N of Valid Cases	100		

^a3 cells (25.0%) have expected count less than 5. The minimum expected count is 1.55.

Table 16
Family Income & Attitude to Risk Analysis

		<i>Attitude to Risk</i>				<i>Total</i>
		<i>Safety of Capital</i>	<i>Meets Current Requirement</i>	<i>Accept some fluctuation</i>	<i>Accept high degree of Risk</i>	
Family Income	< ₹5 Lakhs	5	13	21	13	52
	₹5 - ₹10 Lakhs	1	10	10	5	26
	₹10 - ₹15 Lakhs	0	5	8	4	17
	> ₹15 Lakhs	1	2	1	1	5
Total		7	30	40	23	100

Table 16
Chi-Square Test - Family Income & Attitude to Risk

	<i>Value</i>	<i>Df</i>	<i>Asymptotic Significance (2-sided)</i>
Pearson Chi-Square	5.499 ^a	9	.032
Likelihood Ratio	6.370	9	.029
Linear-by-Linear Association	.079	1	.023
N of Valid Cases	100		

^a8 cells (50.0%) have expected count less than 5. The minimum expected count is .35.

6. CONCLUSIONS

After considering the results of the analysis, hypotheses 1, 2 and 3 were rejected. The many of respondents indicated a higher RTS over their RCS. The results come out inconsistent to Gitman and Joehnk (2005) who documented that “risk tolerance is lower than risk capacity”. This necessitates for future examination to understand why an investor can bear more risk than his / her ability to handle it.

The level to which students expressed acceptance for higher risk than their capacity is motivating. It may really be factual that younger people have a greater tolerance than the older one. Schooley & Worden (2003) employed FRB Survey data to show that the new generation individuals every time demonstrate the higher acceptance for financial investment risk.

It might be because they are very youthful, their investment horizon is extensive enough that they look to take more risks. They do not have previous generations’ supposition of a pensions to guarantee them adequate income after retirement. We intend to take on further consideration of youngsters, those who are full- income-earners compared to part-timers.

H3 and H4 have some support from the tests. Male respondents appear to have a superior RTS. In addition to that, men show a superior RCS too. The results found support from Nofsinger (2005) who marked that men have a superior risk tolerance than women.

Among the gender, with respect to liquidity, desired rate of return and attitude towards risk, the male and female students did not show any difference in requirement for liquidity, desired rate and risk tolerance. Both men and women responded alike in the taken sample. The same was tested among the different income earners and was found that the high income earning investors were having a high risk tolerance than the other groups.

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