AN EMPIRICAL STUDY OF GENDER DIFFERENCES IN RISK AVERSION AND OVERCONFIDENCE IN INVESTMENT DECISION MAKING

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Abstract

Since times immemorable gender differences have existed across countries and cultures and have been researchers' cynosure in almost every endeavour of human civilisation. Several studies have examined the linkages between gender and behavioural finance biases. Here an attempt is made to look at how gender, risk aversion and overconfidence may affect the investment decision making of the individual investor. The purpose of the research paper is to study possible gender effects on risk aversion and overconfidence in investment decision making. A narrow sample, explicitly 168 respondents conveniently selected were administered a behavioural finance questionnaire comprising nine closed ended questions. Chi-square has been used as a statistical tool for data analysis. The authors have found female are more conservative than their male counterparts in terms of risk aversion. In terms of overconfidence, they could not reach to any conclusion with certainty because research has shown mixed results.

Key words: Behavioural Finance, Gender differences, Investment decision making, Overconfidence, Risk Aversion.

1. INTRODUCTION

Finance can no longer be considered just as a science of numbers. In practice, investment making decisions are not always consistent with the assumptions made by eminent financial analysts and techniques learnt in the books. Behavioural finance has developed as standard finance could not explain the reasoning patterns of investors, including the psychological processes involved and the extent to which they influence the investment making decisions.

Since times immemorable gender differences have existed across countries and cultures and have been researchers' cynosure in almost every endeavour of human civilisation. In the field of behavioural finance academicians and researchers have studied the gender differences and their empowering impact on the investment decision making of individual investors.

Around the world this gender influence has dramatically increased the concern of financial advisors and companies which has created opportunities for these organizations to re-evaluate their approaches towards individual investors.
In many research studies it has been found that 80-90% of female will be responsible for their investment decisions. Hence the financial advisors tend to recommend the females to choose investment alternatives which are less risky than males. These studies found that females are more risk averse when compared to the males**.** More over the financial advisors are assuming that female prefer to invest in less risky investment. Most of the studies proved that female are risk- prone than males.

Now a days, we can find there is an investing gap between the male and female regarding the investment capabilities. Research on gender and risk aversion says that females may not be able to behave in the same manner as males in risk taking and handling risky investment alternatives. Male and female have difference in their outlooks and orientations. The present research study concentrates on gender differences in risk aversion and over confidence in investment decision making.

2. REVIEW OF LITERATURE

In order to fulfil the objective of the present study a literature review has been conducted. In the literature review earlier studies and articles related to behavioural finance have been read with a view to gain theoretical knowledge in the field of study and formulate hypothesis.

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2.1 Overconfidence

One of simple and powerful justification for high levels of trading on financial markets is given by a psychological factor namely overconfidence. Psychologists have determined that overconfidence causes people to overestimate their knowledge, underestimate their risks and exaggerate their ability to control events. Confidence in investment decisions is strongly affected by gender. Women tend to show a lower degree of confidence than men [Powell and Ansic1997].

A rational investor only trades if the expected gain exceeds the transactions costs. An overconfident investor overestimates the precision of his information and thereby the expected gains of trading. He may even trade when the true expected net gain is negative [Berggren, J. and Gonzalez, R. [2010]].

Researchers have shown that human beings are overconfident not only about their abilities, their knowledge, and their future prospects but also about their judgments and knowledge regarding financial decisions [J. Klayman et al 1999] [Dittrich et al [2001]. But the level of confidence exhibited by male investors may be different from that of female investors. One can say that the more a person trades the more likely the individual is to be confident with financial decisions [Barber and Odean 2001].

Among the earlier studies Lenney [1977] reports that gender differences in self-confidence depend on the lack of clear and unambiguous feedback. Feedback in the stock market is ambiguous. Therefore there exists all the more reason to expect men to be more confident than women about their ability to make common stock investments. Lewellen, W. G et al [1977] reported that men spend more time and money on security analysis, rely less on their brokers, make more transactions, believe that returns are more highly predictable, and anticipate higher possible returns than do women. In all these ways, men behave more like overconfident investors than do women.

The main problem with women being less overconfident in financial decisions is that they are more likely to avoid financial issues in general and that women are more likely to postpone financial planning [Graham et al 2002].

Additionally, overconfidence can either increase or decrease depending on the complexity of the task and the uncertainty perceived with the task. Overconfidence increases with the complexity of the task and overconfidence decreases when the perceived uncertainty is high [Dittrich et al 2001].

Hence, gender differences in overconfidence have been illustrated in numerous studies. Overconfidence is a characteristic found in both men and women; however, women have a tendency to display less overconfidence about a financial judgment than do men [Bengtsson, et al 2004; Beyer and Bowden 1997]; [Ricciardi and Simon 2000]; [Barber and Odean 2001]; [Powell and Ansic 1997], [Lundeberg et al [1994]].

2.2 Risk Aversion

Risk aversion is affected by financial knowledge, prior financial experience, and wealth. Meyers-Levy [1986] suggested that females are more comprehensive information processors than males. Females attempt to use all available cues and information whereas males use heuristics, focussing on single inference and highly salient cues. While both genders categorise information for ease of processing, males tend to use broad categories with few subcategories while women use more subcategories reflecting relatively detailed distinctions. This suggests a benefit for females in dealing accurately with more complex products and more detailed information.

Prior studies on gender and risk aversion show mixed results. Hersch [1996] put forward that there is considerable evidence that women exhibit greater risk aversion not only in their financial investments but also in other activities including such activities as smoking and seat belt usage. In the same vein the most predominant findings in the academic literature seems to show that there is a tendency among women to have a higher degree of risk aversion than men [Jianakoplos and Bernasek, [1998] and [Sundén& Surrette 1998] and [J. Berggren, and R. Gonzalez, 2010].

V. L. Bajtelsmit at el [1999] and Powell and Ansic [1997] examined how gender affects asset allocation in retirement pension accounts. The study found that there are relative gender differences in the allocation of investments in retirement plans. Their final conclusion was that women exhibit a greater relative risk aversion when choosing the allocation in their retirement savings account.

Bernasek and Shwiff [2001] found that women were more conservative than men when allocating assets in their retirement account. They conclude that gender differences are a significant factor in explaining individual investment decisions.

On the other hand R. Schubert, et al [1999] found that women, under controlled economic conditions, generally do not make less risky financial decisions. They examined investment and insurance decisions as well as abstract gambling decisions and presented evidence that does not support greater risk-averse decisions for women on the basis of experimental evidence. In addition to the contradictory findings, Sundén [2004] found that married women tend to take more risk in their premium pension portfolios than unmarried woman.

Women with fewer tendencies toward overconfidence in investment decisions usually display an increased risk aversion compared with men [Graham et al 2002]. In addition, the lower tendency toward overconfidence could lead to more thoughtful and informed investors since women with less confidence in financial investments would be likely to consider all information available and to ask more questions [Graham et al 2002].

A study by M.M. Pompian and J.M. Longo, [2004] yielded many statistically significant insights by identifying which personality types and genders are susceptible to behavioural biases and suggesting investment programs that mitigate the ill effects of these biases. Broadly, their findings showed that many personality types and both genders are differentially disposed to numerous behavioural finance biases. They suggested that personality type and gender can be used to create an investment program that will compensate for behavioural biases.

To sum up, it can be said that researchers over time have indicated that significant differences occur in decision making depending on the gender of the individual. There seems to be tendencies for women to be less confident in their decisions and more risk averse than men. The present study is intended to show effects of gender differences on risk aversion and overconfidence in investment decision making.

3. RESEARCH METHODOLOGY

The purpose of the research paper is to study possible gender effects on risk aversion and overconfidence in investment decision making.
Hypotheses
H_01: There is no significant association between gender and risk aversion.
H_02: There is no significant association between gender and overconfidence.

3.1 Data Collection
During the summer of 2013, primary data was collected to allow for an empirical assessment of problem under consideration. A narrow sample, explicitly 168 respondents conveniently selected were administered a behavioural finance questionnaire. Enough care has been taken to ensure that the respondents belonged to age group of 25-40 years, are well educated and earning monthly income between Rs.40, 000- Rs.1, 00,000 in capital city Delhi. All responses were anonymous, but the respondents have been requested to list their gender.

3.2 Data Analysis
The primary data gathered for the research have been analyzed using SPSS. Chi-square has been found to be the most appropriate statistical tool which could justify the purpose and hypotheses of the study. For the chi-square test a 95% confidence interval has been used. The rationale behind using chi-square for analysing data of the present study is that the data are nominally scaled and the chi-square test is used to measure if the differences between the genders are statistically significant.

3.3 Limitations
3.3.1 Within the subject of financial decisions two behavioural variables -risk aversion and overconfidence have been investigated. The other behavioural variables such as; herding and anchoring. All of these may have contributed even greater understanding of the variations between genders but were outside the scope of our study.
3.3.2 The sample size is too small. So the study may not be readily generalized to the population as a whole.

4. ANALYSIS AND INTERPRETATION

4.1 Gender distribution among respondents
The first question concerned gender distribution of the respondents. The sample consists of 78 male and 90 female respondents thus making a total sample size of 168 respondents.[table1]

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Table 1: Gender distribution

	Frequency	Percent
Male	78	46.4
female	90	53.6
Total	168	100.0

4.2 Frequency of investing in the financial market

This question is pertinent since the frequency of making investments in financial markets implies that the respondent have basic knowledge about the financial markets operations. Table 2 shows out of 168 respondents 26.1% of the male respondents and 56.7% of female respondents have answered that they never invest any money in the financial market. 38.5% of the male respondents and 36.7% of female respondents have answered that they sometimes invest money in the financial market. 38.5% of the male respondents and 6.7% of female respondents have answered that they regularly invest money in the financial market.

Table2:Gender with Frequency of Investment

Gender			frequency of investment			
			Never	sometimes	regularly	Total
Male	Count		18	30	30	78
	% within gender		23.1%	38.5%	38.5%	100.0%
female	Count		51	33	6	90
	% within gender		56.7%	36.7%	6.7%	100.0%
Total	Count		69	63	36	168
	% within gender		41.1%	37.5%	21.4%	100.0%

Chi-Square =31.228, significant at 0.05 level

The calculated value of Chi^2-test statistic is 31.228 and the critical value is 5.991[at a 95% level of confidence]. This shows that the responses between the genders are significantly different from each other as far as their frequency of Investment is concerned

4.3 Measuring Risk Aversion

4.3.1 Risk Taking Description

In this question we measure the attitude of the respondents towards risk taking. Out of 168 respondents, 47.4% of the male respondents and 20% of female respondents have seen themselves as risk lovers. 37.2% of the male respondents and 35.6% of female respondents have answered that they are willing to take calculated risk after sufficient research. 10.3% of the male respondents and 30% of female respondents describe themselves as risk neutral.5.1% male and 14.4% females described themselves directly as risk averse.[Table3]

The calculated value of Chi^2-test statistic is 21.040 and the critical value is 7.815[at a 95% level of confidence]. This shows that the responses between the genders are significantly different from each other as far as their risk taking description about themselves is concerned. Therefore H_01 is rejected.

Table3 : Gender with Risk Taking Description

Gender			Risk Taking Description				
			Risk Lover	Willing to take calculated risk after sufficient research	Risk Neutral	Risk Averse	Total
Male	Count		37	29	8	4	78
	% within gender		47.4%	37.2%	10.3%	5.1%	100.0%
female	Count		18	32	27	13	90
	% within gender		20.0%	35.6%	30.0%	14.4%	100.0%
Total	Count		55	61	35	17	168
	% within gender		32.7%	36.3%	20.8%	10.1%	100.0%

Chi-Square =21.040, significant at 0.05 level

4.3.2 Alternatives of Investment

The respondents were given a hypothetical figure of Rs100,000 with four alternatives of investment namely Fixed Deposits, Saving account in a bank , Mutual funds and Stock market. 15.4% of male respondents and 40% of female respondents have shown their preference towards fixed deposits as an investment alternative. 10.3% of male respondents and 41.10% of female respondents have shown their preference towards saving account in bank as an investment alternative. 41% of male respondents and 4.40% of female respondents have shown their preference towards Mutual Funds while 33.3% of male respondents and 14.40% of female respondents have shown their preference towards fixed deposits as an investment alternative.[Table4]

Table4: Gender with Alternatives of Investment

Gender			Alternatives of Investment				
			Fixed Deposits	Saving Account in Bank	Mutual funds	Stock Market	Total
Male	Count		12	8	32	26	78
	% within gender		15.4%	10.3%	41.0%	33.3%	100.0%
female	Count		36	37	4	13	90
	% within gender		40.0%	41.1%	4.4%	14.4%	100.0%
Total	Count		48	45	36	39	168
	% within gender		28.6%	26.8%	21.4%	23.2%	100.0%

Chi-Square =56.230, significant at 0.05 level

The calculated value of Chi^2-test statistic is 56.230 and the critical value is 7.815[at a 95% level of confidence]. This shows that the responses between the genders are significantly different from each other as far as their choice of alternatives of investment is concerned. Therefore $H_01$is rejected.

To measure their characteristic of risk aversion the respondents have been given a hypothetical situation that they have just lost Rs1000 in a game and have to choose one of the three alternatives
o 50% chance to win Rs.500 and a 50% chance to lose an additional Rs.500
o 25% chance to win Rs.1000 and a 75% chance to lose an additional Rs.1000
o Be contended with your loss and do nothing

74.4% of male respondents and 58.9% of female respondents have shown their preference for first alternative. 15.4% of male respondents and 12.2% of female respondents have shown their preference for second alternative. 10.3% of male respondents and 28.9% of female respondents have shown their preference for third alternative.[table5]

Table5: Gender with Alternatives to Compensate for loss

Gender			Alternatives to compensate for loss			
			50% chance to win Rs.500 and a 50% chance to lose an additional Rs.500	25% chance to win Rs.1000 and a 75% chance to lose an additional Rs.1000	Be contended with Loss and do nothing	Total
Male	Count		58	12	8	78
	% within gender		74.4%	15.4%	10.3%	100.0%
female	Count		53	11	26	90
	% within gender		58.9%	12.2%	28.9%	100.0%
Total	Count		111	23	34	168
	% within gender		66.1%	13.7%	20.2%	100.0%

Chi-Square =8.987, significant at 0.05 level

The calculated value of Chi^2-test statistic is 8.987 and the critical value is 5.991[at a 95% level of confidence]. This shows that the responses between the genders are significantly different from each other as far as their choice of alternatives to compensate for loss are concerned. Therefore $H_01$is rejected.

4.3.3 Investment option in case of inheritance

To further measure their characteristic of risk aversion the respondents have been given another hypothetical situation that in case they inherited Rs.20, 00,000 which investment option would they choose:
o 70% in low risk, 20% in medium risk, 10% in high risk
o 50% in low risk, 35% in medium risk, 15% in high risk
o 25% in low risk, 15% in medium risk, 60% in high risk

32.1% of male respondents and 75.6% of female respondents have shown their preference for first alternative. 15.4% of male respondents and 24.4% of female respondents have shown their preference for second alternative. 52.6% of male respondents and none of female respondents have shown their preference for third alternative. [Table 6]

The calculated value of Chi^2-test statistic is 63.289 and the critical value is 5.991[at a 95% level of confidence]. This shows that the responses between the genders are significantly different from each other as far as their investment option in case of inheritance is concerned. Therefore $H_01$is rejected.

Table6: Gender with Alternatives in case of Inheritance

Gender			Alternatives in case of inheritance			
			70% in low risk, 20% in medium risk, 10% in high risk	50% in low risk, 35% in medium risk, 15% in high risk	25% in low risk, 15% in medium risk, 60% in high risk	Total
	Male	Count	25	12	41	78
		% within gender	32.1%	15.4%	52.6%	100.0%
	female	Count	68	22	0	90
		% within gender	75.6%	24.4%	.0%	100.0%
Total		Count	93	34	41	168
		% within gender	55.4%	20.2%	24.4%	100.0%

Chi-Square =63.289, significant at 0.05 level

4.4 Measuring Confidence

4.4.1 Ability to cope and interact with other people

In this question we measure the overconfidence amongst the respondents. None of the male or female respondents have answered that they consider themselves to be below average and therefore this option has not been shown in the table. 30.8% of male respondents and 66.7% of female respondents have shown average ability to cope and interact with other people. 69.2% of male respondents and 33.3% of female respondents have shown above average ability to cope and interact with other people indicating that males are more overconfident as compared to their female counterparts. [Table7]

The calculated value of Chi^2-test statistic is 21.358 and the critical value is 3.841[at a 95% level of confidence]. This shows that the responses between the genders are significantly different from each other as far as their ability to cope and interact with other people is concerned. Therefore $H_02$is rejected.

Table 7: Gender with Ability to cope and Interact with people

Gender			Ability to cope and Interact with people		
			Average	Above Average	Total
	Male	Count	24	54	78
		% within gender	30.8%	69.2%	100.0%
	Female	Count	60	30	90
		% within gender	66.7%	33.3%	100.0%
Total		Count	84	84	168
		% within gender	50.0%	50.0%	100.0%

Chi-Square =21.538, significant at 0.05 level

4.4.2 Understanding of what is good

In this question also we measure the overconfidence amongst the respondents. 5.1% male respondents and surprisingly none of the female respondents have answered that they consider themselves to be below average. 32.1% of male respondents and 56.7% of female respondents have shown average understanding of what is good for them. 62.8% of male respondents and 43.3% of female respondents have shown above average understanding of what is good for them indicating that males are more overconfident and have better understanding of what is good for them as compared to females. [Table8]

The calculated value of Chi^2-test statistic is 13.242 and the critical value is 5.991[at a 95% level of confidence]. This shows that the responses between the genders are significantly different from each other as far as their understanding of what is good for them is concerned. Therefore $H_02$is rejected.

Table8: Gender with Understanding of what is good

			Understanding of what is good			
			Below Average	Average	Above Average	Total
gender	Male	Count	4	25	49	78
		% within gender	5.1%	32.1%	62.8%	100.0%
	female	Count	0	51	39	90
		% within gender	.0%	56.7%	43.3%	100.0%
Total		Count	4	76	88	168
		% within gender	2.4%	45.2%	52.4%	100.0%

Chi-Square =13.242, significant at 0.05 level

4.4.3 Clarity of vision in life

This is the last question to measure the overconfidence amongst the respondents. 5.1% male respondents and 4.4% of the female respondents have answered that they consider themselves to be below average in terms of clarity of vision in life. 20.5% of male respondents and 40% of female respondents have shown average clarity of vision in life. 74.4% of male respondents and 55.6% of female respondents have shown above average clarity of vision in life indicating that males are more overconfident and have better clarity of vision in life as compared to females. [Table 9]

The calculated value of Chi^2-test statistic is 7.466 and the critical value is 5.991[at a 95% level of confidence]. This shows that the responses between the genders are significantly different from each other as far as their clarity of vision in life is concerned. Therefore H_02 is rejected.

Table 9: Gender with Clarity of vision in life

			Clarity of vision in life			
			Below Average	Average	Above Average	Total
Gender	Male	Count	4	16	58	78
		% within gender	5.1%	20.5%	74.4%	100.0%
	female	Count	4	36	50	90
		% within gender	4.4%	40.0%	55.6%	100.0%
Total		Count	8	52	108	168
		% within gender	4.8%	31.0%	64.3%	100.0%

Chi-Square =7.466, significant at 0.05 level

5. FINDINGS AND CONCLUSION

The findings of the study contribute more material to the field of behavioural finance and gender differences. In the present research paper it has been concluded that frequency of investment in female is lesser when compared to the male. Hence, we can say that the gender has a major effect on the investment decision making. Female are more conservative than their male. Our study is supported by other research done within this field and confirms risk aversion differences due to the gender of the individual. We can also conclude that male does not prefer to invest in risk free investment. Regarding the risk aversion, it has been observed that female are more risk averse than male, from this we can conclude that male are more inclined towards risk taking. In supporting to the above statement it has been observed that the male prefer to invest in more risky avenues when compared to female, female prefer to invest in risk free investment. In terms of overconfidence, we cannot reach to any conclusion with certainty because research has shown mixed results.

6. SCOPE FOR FURTHER RESEARCH

The present research work gave some important major implications on gender differences and risk aversion in financial decisions. Due to some limitations in the paper we suggest that there is a lot scope for further research in this field of finance. Studying carefully the behavioural patterns in investment decision making process may have major implications between genders. In addition to this a more accurate manner should be followed in evaluating the overconfidence levels in the gender.

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