

A Study on Assessment of Markowitz Portfolio Model in Predicting Return on Investment

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ABSTRACT

Financial theories, such as Markowitz portfolio theory attempt to pin down investment decision making in terms of risk and return. However, a number of studies as well as theories from investment behavior suggest that risk and return are just two facets of investment decision and should be seen as a part of a bigger framework. This study examines the portfolio of casual investors through the lens of Markowitz theory and identify whether they are capable of making efficient portfolio or not. The results of this study reveal that there is huge gap between risk and return of casual investors. These findings will be useful for financial intermediaries who can use these findings to make appropriate financial strategy for targeting casual investors.

Keywords: Casual Investors, Portfolio Theories, Investment Decision Making, efficient portfolio, fund diversification.

INTRODUCTION

Return is the primary motivating force that encourages investment. It is a reward for one's investment. If investors are able to understand different investment options and try to pursue proper investment strategy, than they can obtain higher returns. However, return is always accompanied with some risk and all investment decisions involve a tradeoff between risk and return. These two factors have the strongest effect on an investor's investment decision (e.g., Alexander et al., 1997; Capon et al, 1994). A number of theories (Markowitz Portfolio Utility Theory, Sharpe Single Index Model and Capital Asset Pricing Method) have been proposed to examine risk-return trade-off. These theories are useful for calculating risks and returns involved in single instruments, single portfolio and n number of portfolio and are useful for investors in developing an optimum portfolio and risk-hedging. These models assess the problem of an investor (Risk Vs. Return) who has limited access to money and who makes a sequential decision on long lasting investment under uncertainty (Gregory, 1983).

However, casual investors do not have the ability to process risk return information and they are more likely to go for investment decision based on other factors, such as friend's influence or market condition or any other subjective norm. A large percentage of investors

are likely to be casual and therefore to tap this market it is important to analyze their portfolio decisions. Moreover, as most of the market speculation as well as financial products are built upon existing portfolio management theories, it would be worthwhile to understand their performance with the actual returns obtained by an investor.

Therefore, to respond to this call, this study examines the portfolio development strategy of casual investors. The specific research questions addressed in this study are: *What are the considerations of a casual investor in developing an efficient portfolio of risk and return? How does the portfolio management theory compare with the return predicted by them with the actual returns obtained by the investor?* Based on Markowitz portfolio theory, this study develops a portfolio for casual investors and assesses its effectiveness.

LITERATURE REVIEW AND THEORETICAL BACKGROUND

A Casual Investor

In laymen terms, the term casual investor refers to a general investor who hardly has any knowledge of the market and who is not sophisticated enough to make calculated investment decisions. Such investors are governed by hunch feelings, influences of friends and relatives, popular investment instruments in the market etc. in making their investments. Since, they lack knowledge of market-forces they cannot make optimum portfolios through which they can obtain higher returns from market (Gupta and Sharma, 2010).

Previous studies on investment decision making (e.g., Al-Azmi, 2008; Alexander et al., 1997; Wilcox, 2003; Capon et al., 1994) argue that investors should not be treated as one homogeneous group. Al-Azmi (2008) argues that men and women as investors should be treated as separate market niches, each with its own needs and requiring targeted marketing strategies. Investment companies and financial service marketers should design investment programs to respond to the particular needs of women investors, men investors, investors with particular education and age levels, wealthy investors, and expatriate investors. Alexander et al. (1997) assert that financial literacy plays a significant role in investor's decision to invest in mutual funds. According to Wilcox (2003) investors with a greater knowledge of basic finance are less likely to make reasonable fund choices. Capon et al. (1994) studies the differential characteristics of affluent investors (liquid assets > 1.0 million) and typical investors for developing marketing strategies. Based on Capon et al. (1994) we would classify the group of typical investors as casual investors. A casual investor is one whose decision making is not a result of elaborate theoretical considerations (Wilcox, 2003). Thus, casual investors do not undergo a thorough financial analysis for making their investment decisions and the value of their investment is comparatively low (liquid assets < 1.0 million). It is possible that informal investors, that is, private individuals who provide risk capital directly to unlisted small firms, may play a significant role in filling the finance gap for entrepreneurial ventures (Hans Land strom, 1995).

Advertisement also influences investors' investment decision by influencing their mood and attention and thus attracts investors (Frank et al., 2005). According to Catherine (2004), before taking investment decision each investor collects information regarding investment

from various sources. Education level of investor also influences investment decision. Morgan et al. (1965) assert that it is not the level of marginal tax that appears to matter nor in the aggregate is the array of sophisticated loopholes or tax havens of many consequences in influencing investor decision. Wallace et al., (1989) report that fluctuations in the stock market also influence an investor's investment decision. The abnormal returns of a year are positively correlated with the abnormal returns of next year and vice versa. Investor's decisions may also be influenced by the overreaction of stock market (Davidson, 1989).

Apart from these factors, an investor's previous investment experience also plays an important role in his/her investment decisions. If an investor feels regret from previous investment, he tends to change his investment decisions (Gupta and Sharma 2011). Research on investment decision making considers the role of experienced and anticipated regret on investment behavior (e.g., Raeva and van Dijk, 2009; Bailey and Kinerson, 2005).

One common thread in these studies is that they examine the role of one's own experience on investment decision making. However, one's investment decisions in life can also be influenced by other's experiences (such as friends and family member). In this study, an attempt is made to study the influence of friends (here, friends and family member refer to all those who closely influence one's decisions) on one's investment decision. Regret arise when investment instrument do not fulfill the expectation of investors. Anticipated regret also influences investment decision. Lack of proper investment strategy, confusion regarding information and uncertainty can influence choice of investor investment decision (Basu et al., 2006; Zhang, 2006).

Table 1: Research on Investment Decision

Sl. No.	Author(s)	Study	Findings
1.	Hans Landstrom (1995)	The present study will describe the decision-making criteria used by informal investors and analyze the effects investment strategies have on the propensity to accept or reject new investment proposals.	Many informal investors mentioned criteria such as not enough knowledge of the firm and/or owners and/or management, lack of information about the firm, and not enough knowledge about the industry to make an adequate evaluation as important criteria for their decision
2.	Jean Charles Rochet (1997)	The problem of risk averse firm with limited liability. The article aim is to formulize the consequences of limited liability on the risk-taking- behavior of a rational decision maker.	Limited liability clause increases the optimal exposure to risk. Change in the decision makers wealth affect behavior
3.	Al- Azmi (2008)	Investigates the determinants of risk tolerance of individual investors	Men are more risk averse than women. Less educated investors are less likely to risk averse. The effect of age on risk tolerance is complex

Portfolio Management Theories

Allocation of assets in different financial instruments is called portfolio management. It is concerned with investment management. A number of portfolio management theories such as Markowitz Portfolio Utility Theory, Sharpe Single Index Model and Capital Asset Pricing Method predict future risk and return of a portfolio based on risk and return. Generally speaking, risk and potential return are related. This is the risk/return trade-off. Higher risks are usually associated the expectation of higher returns although at the cost of increased volatility. The school of thought when investing in mutual funds suggests that a longer investment time horizon reduces the influence of short-term volatility on one's investment and vice-versa. In a portfolio investor keeps different financial securities. So, individual risk and return are important to calculate portfolio return and risk.

Bayesian networks have also been used for making financial forecasts (Ronald et al., 2006). This method is good when investor invests huge amount in market or invest in venture capital. Bayesian network help investors to make unbiased decision. The output of Bayesian network is probability distribution for the value of the portfolio. Network selection behavior is also a new approach for making efficient portfolio (Litman et al., 2002). It is concerned with maximizing returns whereby an investor is willing to take a minimum level of risk (Rochet et al., 1997) .

Most of the investors are unaware of even basic financial theories and hardly consider these theories or models for making optimum portfolio. Casual investors are generally not familiar with different financial tools based upon which they can take informed investment decision. Investor's experience and friends experience also influence investment decision (Gupta and Sharma, 2009). Limited liability and level of wealth affect rational investor's investment decision. Limited liability can be one reason for minimization of risk (Rochet et al., 1997).

Table 1: Research on Investment on Risky Instruments

Sl. No.	Author Name	Results
1	Atkinson, Baired and Malissa (2004)	Gender influence investor behavior and risk aversion. Examining female mutual fund managers enables us to adequately control for wealth and knowledge deference between male and females.
2	Davidson and Dutia (1989)	This study demonstrates that abnormal returns earned in one year are positively related to the abnormal returns earned in the next year
3	Schooley and Debra (2003)	Financial planners must develop relationships and get to know their clients in order to best understand their clients" attitudes toward risk.
4.	Zhang (2006)	Analysts tend to walk down (up) their estimates for bad-news (good-news) firms as the forecast horizon decreases and more information becomes available. Efficiency of financial forecaster also influence
5.	Cazila and Tahra (2007)	Understand the techniques that will advance the female client from a more elementary stage to a more advanced stage.

		Direct particular attention to female clients who struggle through relapse and recycling as they attempt to become better informed and more confident investors.
6.	Gregory (1983)	Consumer is interested in buying product which is sold at different store at different prices
7	Israel and Chalfant (1993)	Investors were assumed to face multivariate risk consisting of an uncertain wealth, uncertain prices of goods consumed, and possibly other risky attributes.
8	Berger and Bodie (1979)	Always investor chooses best combination for making optimal portfolio.
9	Goetzmann and Ning (2005)	stock prices are driven by investor actions based upon mood rather than upon reason
10	Rochet et al. (1997)	Limited liability clause increases the optimal exposure to risk. Change in the decision makers wealth affect behavior
11	Jahnke et al. (2005)	If investor understand the variation in the market than they can take right decision in right time.
13	Renwick (1968)	It became apparent during the course of this investigation that the current state of the art in financial analysis could be widened and deepened profitably in several areas.
14	Brich and Calvin(2007)	This studies shows that how the firm decide optimum and desire level of capital for continuing the business and how capital adjusted whenever its offer differ from the optimal and desire level. One purpose of this paper is to incorporate, the impact of uncertainty on the firm's investment behavior.
15	Jorgenson (1963)	We will characterize the long-term response of investment to changes in the underlying market conditions and the tax structure and the time pattern of response of investment to changes in demand for capital.
16	Pawlowski (2008)	This suggests that risk-taking is a pervasive feature of human male psychology.
17	Al- Azmi (2008)	Men are more risk averse than women. Less educated investors are less likely to risk averse. The effect of age on risk tolerance is complex
18	Goetzmann and Massa (2002)	Investor prefer low cost, passively managed vehicle for saving. Authors' identify positive feedback trader and momentum investor as well as profit takers and contrarians
19	Fant and Nahas (2001)	The results based on case studies are not consistent: one question leans the investor toward the conservative side, the next the aggressive side.

Calculating investment risk and return using Markowitz Model

In this study we use Markowitz model for examining the investment decision of casual investors. Following assumptions are made in the Markowitz model:

- Investor decisions are based on expected risk and return and are measured by mean and variance of the return on the security.
- All investors have the same time horizon
- All investors are in the agreement as to the parameter necessary, and their values in the investment decision.
- Financial assets are arbitrarily fungible (exchangeable).

Using Markowitz model, we can calculate overall risk and return of a portfolio. We now discuss the process of calculating the risk and return. Risk refers to the possibility that one will lose money (both principal and any earnings) or fail to make money on an investment. There are various types of risk associated with a share market investment that an investor must be aware of. A fund's investment objective and its holdings are influential factors in determining how risky a fund is. Here, we describe various risks associated with a Share market investment.

Different share market categories, as defined earlier, have inherently different risk characteristics and should not be mutually compared. A bond fund with below-average risk, for example, should not be compared to a stock fund with below average risk. Even though both funds have lower risk for their respective categories, stock funds have a higher risk/return potential than bond funds. Of all the asset classes, cash investments (i.e. money markets) offer the greatest price stability but yield the lowest long-term returns. Bonds typically experience more short-term price swings, but in turn generate higher long-term returns. However, stocks historically are subjected to the greatest short-term price fluctuations and provide highest long-term returns. Investors looking for a fund which incorporates all asset classes may consider a balanced or a hybrid mutual fund. These funds can be very conservative or very aggressive (Atkinson et al., 2004). Asset allocation portfolios are mutual funds that invest in other mutual funds with different asset classes. At the discretion of managers, securities are bought, sold, and shifted between funds with different asset classes according to market conditions.

Share market instruments face risk based on the investments held by various investors. For example, a bond fund faces interest rate risk and income risk. Bond values are inversely related to interest rates. If interest rates increase, bond values decrease and vice versa. Bond income is also affected by the change in interest rates. Bond yields are directly proportional to interest rates. Income risk is greater for a short-term bond fund than for a long-term bond fund. Similarly, a sector stock fund (which invests in a single industry, such as telecommunications) is at risk that its price will decline due to developments in the industry (Rochet et al., 1997). A stock fund that invests across many industries is more sheltered from this risk defined as industry risk. Thus, we can consider risk as a difference between expected and actual return. Individual risk can be measured through variance in return. For calculating portfolio risk we have to calculate weighted individual security risk and weighted co-movements between the returns of securities (positive or negative) included in the portfolio and it is measured through covariance. It reflects the degree to which the returns of the two securities co-vary.

Formula of Covariance

$$\text{Cov}(R_i R_j) = p_1 [R_{i1} - E(R_{i1}) - R_j] \\ p_2 + [R_{i2} - E(R_{i2}) - R_j]$$

Here

p_1, p_2, \dots, p_n = Probability associated with states 1 ... n

R_{i1}, \dots, R_{in} = Return on security i in states 1 ... n

R_{j1}, \dots, R_{jn} = Return on security j in states 1 ... n

$E(R_i), E(R_j)$ = Expected return on securities i and j

Calculation of Portfolio Risk in 2- Security Case

In this section we discuss how to measure correlation and covariance, if investors have two securities in his/her portfolio. Following formula is given by Markowitz (1950).

$$\sigma_p^2 = w_1^2 \sigma_1^2 + w_2^2 \sigma_2^2 + 2w_1 w_2 p_{12} \sigma_1 \sigma_2$$

Here

σ_p^2 = variance of the portfolio return

w_1, w_2 = weight of security 1 and 2 in the portfolio

σ_1^2, σ_2^2 = variance of the return on security 1 and 2

$p_{12} \sigma_1 \sigma_2$ = covariance of the returns on security 1 and 2

For calculating variance of the portfolio return (risk), first of all we need to determine the weight of individual security of overall portfolio. For example, Invested amount of Mr. X is \$ 2000 in two different securities, \$1200 in security 1 and Rs. \$800 in security 2. Thus, the weights of these securities are 0.60 and 0.40 respectively. Now, we need to calculate the risk for individual security followed by calculating covariance (the relative movement between securities) of the overall portfolio.

Calculation of risk in case of n- Securities

Calculation of risk for n security in portfolio

$$\sigma_p^2 = \sum \sum w_i w_j p_{ij} \sigma_i \sigma_j \\ \sigma_p = [\sum \sum w_i w_j p_{ij} \sigma_i \sigma_j]^{1/2}$$

Here,

σ_p^2 = variance of portfolio risk

σ_p =standard deviation of portfolio return

w_i = proportion of portfolio invested in security i

w_j = proportion of portfolio invested in security j

p_{ij} = coefficient of correlation between the returns on security i and j

σ_i = standard deviation of return on security i

σ_j = standard deviation of return on security j

Table 3: Covariance Matrix

$$\begin{bmatrix} & 1 & 2 & 3 & \dots & n \\ 1 & w_1^2\sigma_1^2 & w_1w_2p_{12}\sigma_1\sigma_2 & w_1w_3p_{13}\sigma_1\sigma_3 & \dots & w_1w_n p_{1n}\sigma_1\sigma_n \\ 2 & w_2w_1p_{21}\sigma_2\sigma_1 & w_2^2\sigma_2^2 & w_2w_3p_{23}\sigma_2\sigma_3 & \dots & w_2w_n p_{2n}\sigma_2\sigma_n \\ 3 & w_3w_1p_{31}\sigma_3\sigma_1 & w_3w_2p_{32}\sigma_3\sigma_2 & w_3^2\sigma_3^2 & \dots & \dots \\ \dots & \dots & \dots & \dots & \dots & \dots \\ n & w_nw_1p_{n1}\sigma_n\sigma_1 & & & & w_n^2\sigma_n^2 \end{bmatrix}$$

Table 3 shows that through expected risk (difference between expected and actual return), weight of individual security on portfolio and correlation between return on securities we can calculate the overall risk of portfolio.

RESEARCH MODEL AND HYPOTHESIS

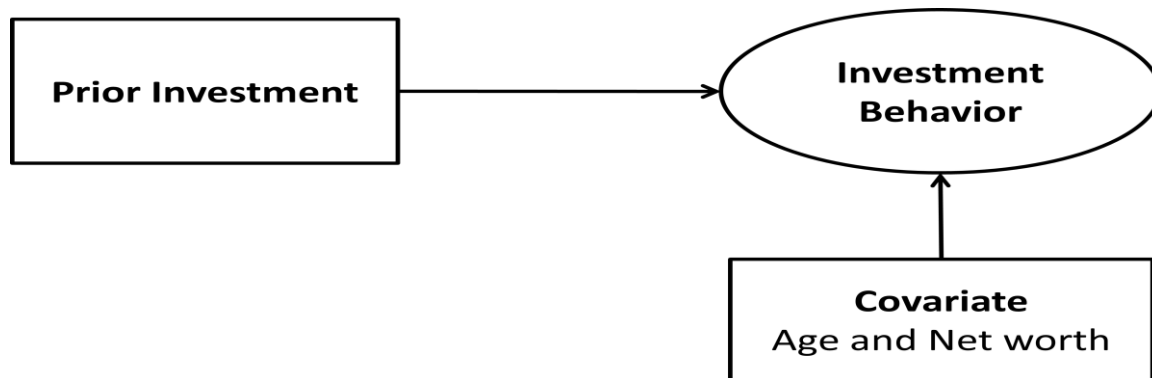


Figure 1: The Research Model

Research on investment behavior shows that past experience, whether good or bad, influences future investment decision of investors. Investor choice can change based on prior investment experience. Seeing their outcomes, investors may either feel happy or sad. If they feel sad then their investment choice may change. The research model is to be studied separately for prior investment (it can be in risky or riskless instruments). Age and net worth is also added as a covariate as it is possible that with increase in age people become more experienced in investments. Net worth may also influence future investments, as with greater net worth one may become less influenced by failures. By considering outcome of prior investment, investors try to diversify accumulated fund in various financial instruments thus constructing

portfolio. In this study we collect investor portfolio and expected risk and return for each instrument.

RESEARCH METHODOLOGY

Instrument Development

The survey instrument for collecting risk and return expectations of casual investors consisted of two hypothetical scenarios (one each for risky and riskless instruments) as explained below:

Scenario I

*Your friend 'Ram' invested his savings \$2000 in a **risky** instrument. Now you are considering investing the accumulated savings you have (\$2000). Considering the above scenario, please tick where would you invest this amount you have.*

- i. Risky Market Instruments (such as Shares, Mutual Fund, Unit linked Insurance Plans, Fixed deposits of private companies)
- ii. Riskless Market Instruments (such as Govt. Bonds, Securities, Public Provident Fund)
- iii. A combination of Risky and Riskless (In this case please indicate the amount you would invest in Risky and Riskless market Instruments)

Scenario II

*Ram invested his savings \$2000 in **riskless** instruments. Now you are considering investing the accumulated savings you have (\$2000). Considering the above scenario, please tick where would you invest this amount you have.*

- i. Risky Market Instruments (such as Shares, Mutual Fund, Unit linked Insurance Plans, Fixed deposits of private companies)
- ii. Riskless Market Instruments (such as Govt. Bonds, Securities, Public Provident Fund)

A combination of Risky and Riskless (In this case please indicate the amount you would invest in Risky and Riskless market Instruments)

The casual investor was asked to make a choice between risky, riskless or a portfolio of investments.

Data Collection

The data were collected from casual investors. Thus, a total of 144 responses were obtained for the study, in which 71 are male and 73 are female investors. Investors were fairly spread over three age groups. The annual income of most of the investors was between \$2000-6000, fairly common among Indian middle class families. Most of the investors had net worth less than \$30000. These data fairly represents the characteristics of casual investors.

TABLE 4: Descriptive Statistics of Respondent Characteristics

ITEM	MEASURE	FREQUENCY	PERCENTAGE
Age (years)	<20	65	45.13
	20-29	41	28.47
	30-39	38	26.38
	>=40	0	0.00
	Missing	0	0
Gender	Female	73	50.69
	Male	71	49.30
	Missing	0	0
	<\$1,000	31	21.52
Annual Income	\$1,000-3,000	66	45.83
	\$3,000-5,000	37	25.69
	>\$5,000	10	6.94
	Missing	0	0
	<\$10,000	70	48.61
Net worth	\$10,000-30,000	51	35.41
	\$30000-50,000	19	13.19
	>\$50	4	2.77
	Missing	0	0
Total		144	100%

DATA ANALYSIS AND RESULTS

1st Step- Calculation of weight of individual securities in portfolio

First, we calculate portfolio risk and return of 144 casual investors. Expected risk and return are the basis for calculating portfolio risk and return. Using Markowitz portfolio model, we try to evaluate the portfolio risk and return. Generally investors try to minimize risk and maximize return. Risk and return both are important for understanding the efficiency level of portfolio. Hence, we have to calculate weighted average risk of 144 casual investors. First step in calculating portfolio risk and return is to calculate weight of individual securities in the portfolio. For analyzing the current scenario we categorize data by gender because this will help us in understanding the fund diversification strategy of male and female investors. An investor is asked to invest \$2000 in various risky and riskless instruments. Figure 2 shows current fund diversification strategy of male and female investors.

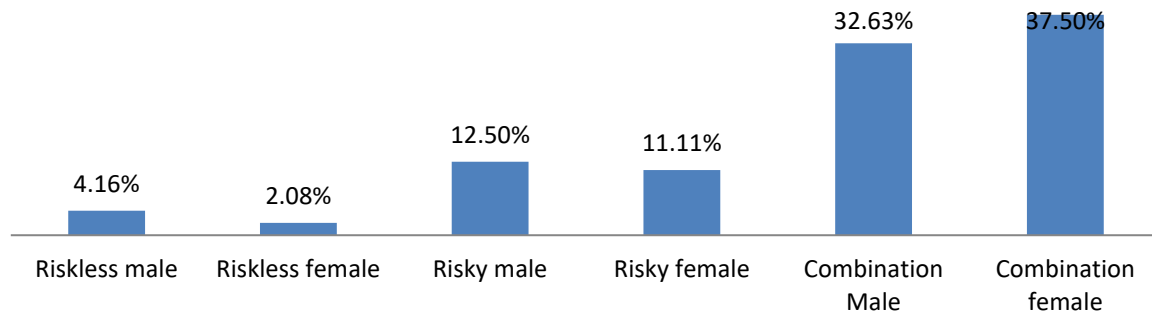


Figure 2: Allocation of Fund of Investors

From Figure 2, we can note that female investors are also interested to save their money in different financial instruments. Figure 2 shows that only 2.08% female investors want to invest their saving in riskless instruments and 11.11% female investor want to invest in risky instruments. 37.5% female investors diversify their invested amount into different risky and riskless financial instruments. Through general observation we see that investment in risky instruments is higher than riskless instruments. India is a male dominating country and even today major financial decision taken by male member of a family. Figure 2 shows the investment pattern of male investors. 4.16% male investors want to invest their saving in riskless instruments and 12.50% investors want to invest in risky instruments. Only 32.63% male investor’s adopted diversification strategy for high return and low risk.

2nd Step- Calculation of expected portfolio return

Return is an important aspect of investment decision. Investment decision can change with changes in return. On the basis of following formula we try to show expected return on portfolio of 144 casual investors.

$$E(R_p) = \sum_{i=1}^n w_i E(R_i)$$

Figure 3 Shows that investor expect higher return from portfolio.

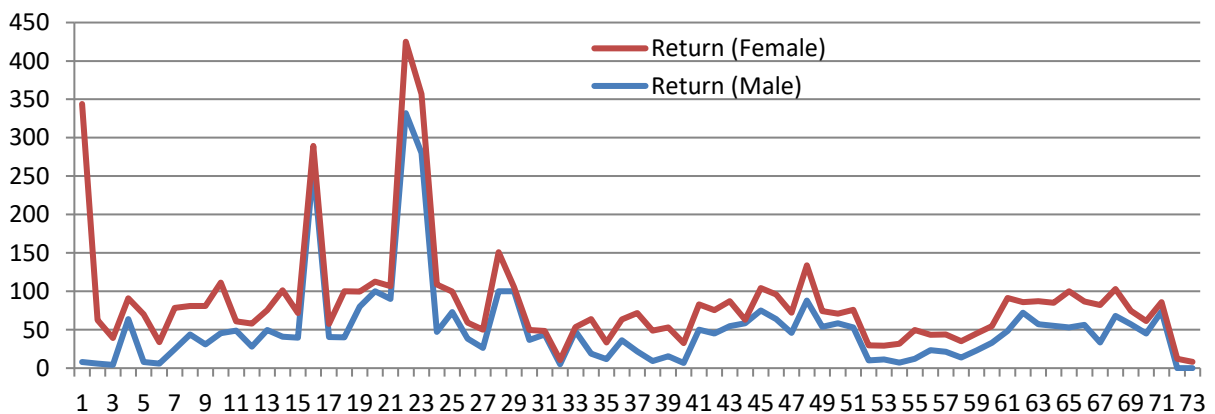


Figure 3: Expected Return of Male and Female Investors

Figure 3 presents a comparison between expected return of male and female investors. We can note that the level of return of female investors is high as compared to that of male investors. After this we can say that female investors also expect higher return from the market.

3rd Step- Calculation of co variance

We have already calculated weight of individual securities in a portfolio and weighted average return of portfolio. For calculating portfolio risk of investors, we have to calculate co-variance and co-relation in the available data. Covariance reflects the degree to which the returns of two securities co-vary (Chandra, 2006). To examine the relationship among various financial instruments, we have to calculate the covariance. Table 5 and 6 show the correlations between various instruments in case of male and female respectively.

Table 5: Risk Correlation of Males

	<i>Share</i>	<i>MF</i>	<i>ULIP</i>	<i>FD</i>	<i>Deb</i>	<i>Bond</i>	<i>Secu</i>	<i>PPF</i>	<i>Govt.FD</i>	<i>JEWELLERY</i>
<i>SHARE</i>	1									
<i>MF</i>	0.57	1								
<i>ULIP</i>	0.52	0.55	1							
<i>FD</i>	-0.04	-0.09	-0.14	1						
<i>DEB</i>	-0.14	0.03	0.24	-0.01	1					
<i>GOV BOND</i>	-0.03	0.07	0.08	0.22	0.11	1				
<i>SECU</i>	0.04	-0.02	0.08	-0.02	0.17	-0.01	1			
<i>PPF</i>	-0.07	0.06	0.08	0.07	-0.02	0.11	0.03	1		
<i>GOVT FD</i>	-0	-0.01	0.1	-0.01	0.25	0.09	0.36	0.10	1	
<i>JEWELLERY</i>	0.61	0.22	0.44	-0.04	0.13	0.12	-0	-0	0.03	1

Table 6: Risk Correlation of Females

	<i>Share</i>	<i>MF</i>	<i>ULIP</i>	<i>FD</i>	<i>De</i>	<i>Bon</i>	<i>Sec</i>	<i>PPF</i>	<i>Govt.F</i>	<i>JEWELLER</i>
	<i>e</i>		<i>P</i>		<i>b</i>	<i>d</i>	<i>u</i>		<i>D</i>	<i>Y</i>
<i>SHARE</i>	1									
<i>MF</i>	0.02	1								
<i>ULIP</i>	-0.2	-0.19	1							
<i>FD</i>	-	-0.19	0.34	1						
<i>DEB</i>	0.02	-0.06	0.05	0.09	1					
<i>GOV BOND</i>	-	-0.08	0.04	0.05	-0	1				
<i>SECU</i>	0.06	0.34	0.06	0.03	0	0.02	1			
<i>PPF</i>	-	-	-	0.0	3	0.02	0.02	1		
	0.13	-0.12	0.03	0.13						

<i>GOVT FD</i>	-	-	-	-	-	-	-	-	-	-	-
	0.12	-0.04	0.02	0.05	0.1	0.02	0.00	0.15		1	
<i>JEWELLER</i>	-	-	-	-	-	-	-	-	-	-	-
<i>Y</i>	0.02	-0.11	0.07	0.08	0.1	0.07	0.07	0.07	-0.08		1

4th Step- Calculation of portfolio risk

In this study we give 10 investment options where investor can invest their saving, hence we apply following formula for calculating portfolio risk of 144 investors. Figure 4 shows that the casual investors examined in this study take high risk.

Formula of: n- Security Case

$$\sigma_p^2 = \sum \sum w_i w_j \rho_{ij} \sigma_i \sigma_j$$

$$\sigma_p = [\sum \sum w_i w_j \rho_{ij} \sigma_i \sigma_j]^{1/2}$$

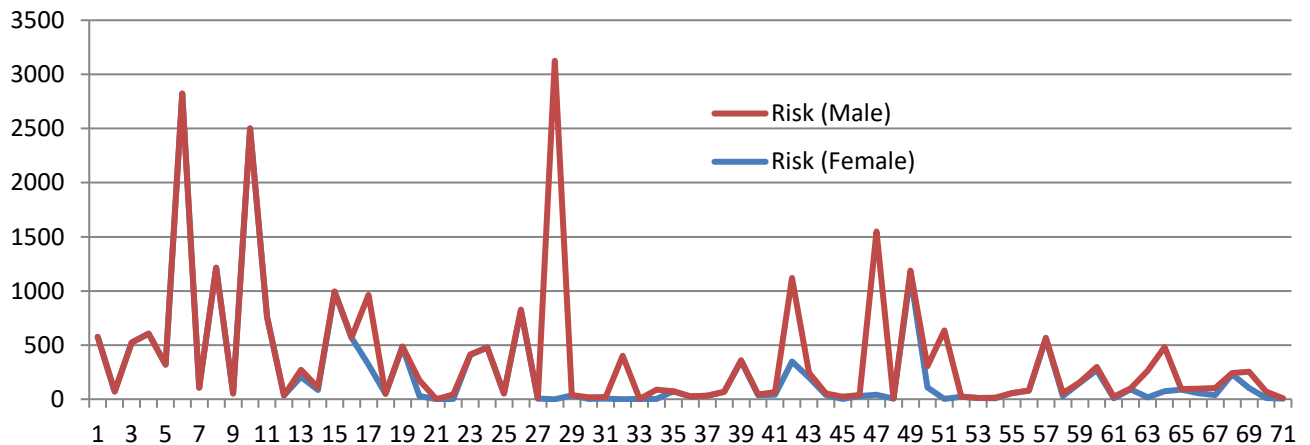


Figure 4: Expected Risk of Male and Female Investors

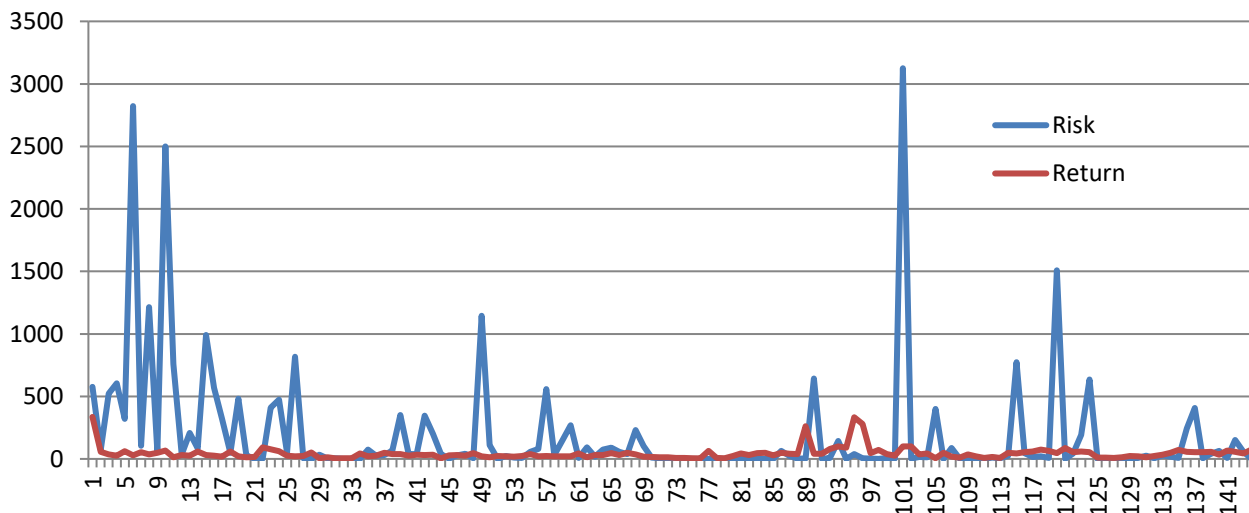
Figure 4 reveals that expected return of male and female investors in case of n-securities. We can note that level of return of female investors is higher than male investors. We can also note that female investors are also able to get higher returns from the market.

The Study The risk and return of portfolio of 144 casual investors. Removing outliers (shown as bold in the above table), we present a risk-return line graph of various investors. We can note that large difference exists between risk and return. Though financial needs vary among individuals, all investors desire higher returns. However, from Figure 5 we can note that investors take higher risk with less return. This is contrary to the portfolio theory. In other words, not even a single investor is able to make an efficient portfolio.

DISCUSSION AND IMPLICATIONS

The result of this study shows that casual investors do not make correct financial decision. They are unable to diversify their funds for making an efficient / optimum portfolio. Risk and return are two very important part of portfolio theory. But casual investors do not consider the min

Figure: 5 Expected Portfolio Risk and Return



making investment decision. They are not able to calculate risk and return of portfolio. After assessing the portfolio of 144 investors we can note that level of risk of casual investors is very high, whereas return is very low. In other words, there is huge difference between risk and return and it is not a good sign for constructing an optimum portfolio. Portfolio theory is effective but investment decision of casual investor is highly influenced by social factors also. Hence, investors do not consider financial theory. Study reveal that even females make investment decisions involving high returns, but fare comparatively low when it comes to risk taking. Almost all investors try to diversify their fund into risky and riskless instruments. Male investors are more interested in taking higher risk as compared to female investors but expected portfolio return in case of female investors is higher than in case of males. Investor can take optimum investment decision by maintaining risk and return of portfolio where both risk and return are equal.

Investors can reduce their portfolio risk, if they consider Markowitz theory. However, it demands information, which is based upon market movements and its change according to market condition. Although, Markowitz portfolio model is helpful for calculating risk and return of a portfolio, in case of casual investors Markowitz model depicts huge gap in risk and return of casual investors thus indicating the inability of casual investors to make an efficient / optimum portfolio. This implies that mutual fund companies and insurance companies and other hedging instruments might obtain a better market among casual investors. By investing in those hedging instruments, investors can get good return and hedge their risk.

These findings will be useful for different financial intermediaries (Mutual Fund Company and Insurance Company), Financial advisors, particularly, agents, chartered accountant, share brokers etc., so that they can make appropriate financial strategy for targeting casual investors. Financial intermediaries can make gender base investment strategy because risk taking capacity of male and female investors is different. They can also develop hybrid financial product (which is combination of risky and riskless instruments). With this strategy, company as well as investors can maintain optimum risk and return and hedge against risk.

CONCLUSIONS

Method of calculation of portfolio risk and return is not easy for a casual investor. Casual investors are unable to understand the movement of financial market and forecast future risk and return. For calculating portfolio risk and return, first investors have to calculate weighted average risk and return than covariance between risks of individual instruments. Adopting portfolio theory is complicated for casual investors; hence they give more emphasis on social factor as compare to financial factors. Overall finding of this study reveals that portfolio theory is not suitable for analyzing investment decision of casual investors.

There are several limitations in this study. First, although we sampled casual investors, the sample size could have been greater. Secondly, we did not capture the initial risk level of the investors. By capturing the initial risk level of all investors, we can measure the effect on subsequent decision more accurately.

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