Endowment Effect as a Function of Gender and Age: Mediating Role of Loss Aversion

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Abstract

Investment decisions of individual investors are influenced by many psychological biases and variation in their demography further increases the complexities of these decisions. The purpose of the paper is to investigate the role of age and gender in determining a hard-wired emotional bias in the mind of investors i.e. the endowment effect. It also explores the mediating role of loss aversion between age, gender, and endowment effect of individual investors in India.Snowball and convenience sampling methods are employed to collect data from respondents. A total of 200 investors were contacted, out of which155 responses were considered useful for further analysis.Since the data are cross-sectional we used AMOS-21 to perform Confirmatory Factor Analysis (CFA) and Path Analysis to examine the relationship between variables. Findings of the study suggest that female investors are more loss averse and levels of their endowment effect are also higher as compared to their male counterparts. Evidence from the study also indicates that as the age of the respondents is increasing their endowment effect and loss aversion are also increasing. Data also revealed that loss aversion does not play a mediating role between gender, age, and endowment effect of Indian individual investors.

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1. Introduction

Investment decision-making is a complex process that requires allocating financial resources to different assets with the objective of getting the highest possible returns while undertaking a minimum amount of risk. A relatively new discipline of behavioral finance explained to us that investors are not solely guided by the factors of risk and return, rather there are many psychological aspects and behavioral biases that unconsciously affect the investment decisions of individual investors. Varied demographic characteristics of the investor population further accentuate the complexities that arise because of deep-seated behavioral biases in the minds of investors. (Baker et.al, 2018; Prosad et.al, 2015). Loss aversion and the Endowment effect are two such biases that originate from a paper titled "Prospect theory: An analysis of decision under risk" by Kahneman and Tversky (1979). In the classical research papers that demonstrate the endowment effect, it is always seen as evidence for loss aversion around a reference point.(Kahneman et.al, 1990; Kahneman et. al, 1991; Knetch & Wong, 2009). This study is an attempt to examine the role of age and gender in determining the endowment effect of an individual investor and the mediating role of loss aversion between demographic variables and the endowment effect.We test our theoretical model using structural equation modeling on the primary data collected from 155 individual investors in the Indian stock market. The results of the study indicate that the gender and age of investors do have a positive and significant impact on the levels of loss aversion and the endowment effect of Indian individual investors. Female investors are more loss averse and levels of their endowment effect are also higher as compared to their male counterparts. Evidence from the study also indicates that as the age of the respondents is increasing their endowment effect and loss aversion are also increasing. Data also revealed that loss aversion does not play a mediating role between gender, age, and endowment effect of Indian individual investors.

2. Literature survey and hypotheses development

The endowment effect is the tendency of people to attach additional value to the things they own simply because they belong to them (Ericson & Fuster, 2014**).** Thaler, (1980) through their exchange experiment with university students demonstrated that goods that are included

in one's endowment are valued more highly than identical goods not held in the endowment and coined the term endowment effect (Reb & Connolly, 2007). Later on Kahneman, Knetch, and Thaler (1991) extended this work and demonstrated the endowment effect through their experiments that are popularly known as the valuation paradigm.In the valuation paradigm, the minimum amount of money that sellers are willing to accept (WTA) is higher than the minimum amount of money that buyers are willing to pay (WTP) to acquire a good. This creates a gap between WTA and WTP which has many economic consequences such as increased inefficiencies and irregularities in the market and reluctance to trade. Thus endowment effect rejects many important assumptions of standard finance.

Loss Aversion: Kahneman and Tversky (1979) described loss aversion as "the aggravation that one experiences in losing a sum of money appear to be greater than the pleasure associated with gaining the same amount of money". The phenomenon emerged from the prospect theory in the form of an "S" Shaped value function passing through a reference point. The observations suggest that people are more sensitive to losses than to gains resulting in a utility function that is steeper for losses than for gains (Kobberling & Wakker, 2005)

Gender, Age,and Loss Aversion: A large body of academic literature suggests that investment pattern differs across gender, females are believed to be more risk-averse and consequently more loss averse than males. Prasad and Mohta, (2012) conducted an empirical survey on 128 Indian investors and found out that female investors are more loss averse in comparison to males. Arora and Kumari, (2015) showed the mediating role of loss aversion between gender, age, and financial risk-taking and found out that gender and age are important determinants of loss aversion and regret aversion, females were found to be more loss averse than males and age was positively related to loss aversion. Johnson et.al, (2006) found that younger respondents in the sample have lower levels of loss aversion as compared to older respondents in their study. Hjorth and Fosgerau, (2011) showed that loss aversion increases with age and decreases with the level of education. Gatcher et.al, (2007) found that loss aversion, in the form of a gap between valuation measures increases with age and income. Thus, past literature provides enough evidence for the fact that age and gender are

important factors in explaining levels of loss aversion in an individual investor. Therefore we form the following hypotheses.

H1 There is a significant relationship between Gender and loss aversion

H2 There is a significant relationship between age and loss aversion

Gender, Age, and Endowment Effect

Harbaugh et.al (2001) in their experimental design tried to relate the endowment effect with age and experience, they found that increase in age does not decrease the levels of endowment in an individual even though the investor becomes more experienced with getting and giving up the goods. Dommer and Swaminathan, (2013) found that men and women have different interpretations of what ownership signifies in an endowment effect context. Wieland et.al (2014) explored gender differences in endowment effect in different countries and found out that when a choice is framed as a willingness to pay (WTP) task, women are willing to pay less than men. However, when a choice is framed as a willingness to accept (WTA) task, women will not accept less than men, giving rise to gender differences in endowment effect across gender. Bao and Gang, (2016) suggest that the endowment effect is weaker in young investors as compared to old investors.

H3 There is a significant relationship between gender and the endowment effect

H4 There is a significant relationship between age and the endowment effect

Loss Aversion and Endowment Effect

From the very beginning, the phenomenon of the endowment effect has been linked to loss aversion. The endowment effect was seen as a manifestation of loss aversion. The pain of giving up a good would be felt as more averse than gaining from the opportunity of acquiring an alternative good (Kahneman et.al, 1990; Kahneman et. al, 1991; Knetch & Wong, 2009)

According to prospect theory losses hurt us more than the gains make us happy. When we sell something it can be viewed as a loss of possession and when we buy something it is viewed as a gain of a new possession, and because of loss aversion people want more compensation for losing an item than buyers who are willing to acquire it, resulting in a

greater discrepancy between WTA-WTP, giving rise to the endowment effect (Dommer and Swaminathan, 2013). Considering the above fact, this paper tries to find the mediating effect of loss aversion on the relationship between demographic variables and the endowment effect of individual investors in India. Thus we form the following hypotheses.

H5 There is a significant relationship between loss aversion and the endowment effect.

H6 There is a mediating effect of loss aversion between gender and the endowment effect

H7 There is a mediating effect of loss aversion between age and the endowment effect.
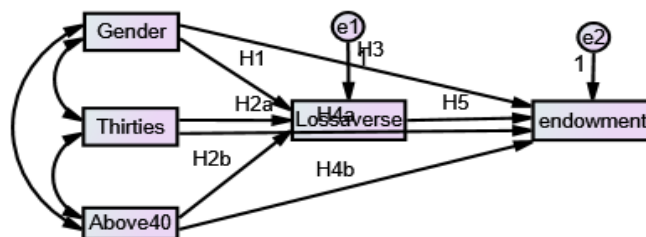
Figure 1: Hypothesized model.

Figure-1

3. Research Design and Methodology

Sampling

The target population for the study consists of individual investors investing in the Indian stock market. The sample area from which the data are collected is Delhi- NCR. Snowball and convenience sampling methods are employed to collect data from respondents. A total of 200 investors were contacted, out of which 170 people filled the survey, after checking for validation, 155 responses were considered useful for further analysis. It has been documented

that there is no specific rule for determining sample size in the case of behavioral studies (Osborne & Costello, 2004). Since the data are cross-sectional we used AMOS-21 to perform Confirmatory Factor Analysis (CFA) and Path Analysis to examine the relationship between variables.

Questionnaire

A self-administered questionnaire was developed containing items related to demography and behavioral biases concerning Indian individual investors. Every construct and item of the study have been identified with extensive literature review and validated by experts from academics.

The questionnaire consists of two sections. Section 'A' deals with respondents' demographic profiles, while section B focuses on behavioral biases using a five-point Likert scale. To assess loss aversion a four-item scale was used which was taken from M. Zat and U. Khan, (2017). Any scale to measure the endowment effect was not found in the literature, therefore it was developed for the study. Four items were finalized to obtain a self-reported view of the endowment effect, which were further evaluated by domain experts for the possibility of reducing or clubbing the items.

4. Data Analysis and Interpretation

Age and Gender are taken as exogenous variables while Loss aversion and Endowment effect are taken as endogenous variables. Path analysis was conducted using Amos to find path coefficients of all the variables. The conceptual model provides for the following relationships

$$LA_i = B0 + B1D_{i,\ Gender} + B2D_{i,\ Age} + e$$

$$EE_i = B0 + B1D_{i,\ Gender} + B2D_{i,\ Age} + e$$

$$EE_i = B0 + B1LA_i + e$$

Where, LA_i is the loss aversion score for respondent i calculated from loss aversion scale. EE_i is the endowment effect score for respondent i calculated from endowment effect scale. Di genderis a dummy variable taking the value of unity if the respondent is female and the

value of zero if the respondent is male. DiAge is a dummy variable taking the value 1 for the reference category and zero for others.

Table 1 shows the mean and standard deviation of endogenous variables.

|	Gender		Age		
	Males	Females	18-30	31-40	Above 40
Loss Aversion	N = 113 M = 3.63 (0.849)	N = 42 M = 4.3 (0.109)	N = 87 M = 3.35 (.844)	N = 47 M = 4.27 (.412)	N = 21 M = 4.7 (.232)
Endowment Effect	M = 2.65 (1.016)	M = 3.63 (.504)	M = 2.75 (.980)	M = 2.94 (.970)	M = 3.96 (.948)

Model Testing

Structural equation modeling is an advance tool of research methodology that assist the researcher to analyze several regression equations simultaneously. It is accepted as dominant multivariate technique in social sciences. We conducted model testing in two steps first, we measured the effect of all independent variables in dependent variables. In the second step, we estimated total, direct and indirect effect in the presence of mediating variable using AMOS Graphics 21. We estimated mediating effect based on bootstrap procedures with in conventional covariance structural framework.

A structural equation model generated through AMOS was used to test the relationships. A Good fitting model is accepted if the value of the CMIN/df is < 5, the goodness of the fit (GFI) indices (Hair et al, 2010); the Tucker and Lewis (1973) index (TLI); the Confirmatory Fit Index (CFI) (Bentler, 1990) is > 0.90 (Hair el al., 2010) In addition an adequate- fitting model is accepted if the AMOS computed value the standardized root mean square residual (RMR) is < 0.05, and theroot mean square error approximation (RMSEA) is between 0.05 and 0.08 (Hair et al.,2010). The fit indices for the model shown in table 2 fell within the acceptable range: **CMIN/df = 2.321, GFI = 0.914, TLI = 0.911, CFI = 0.940, SRMR = 0.053, RMSEA= 0.093**

The squared multiple correlation was 0.583 for loss aversion, this shows that gender and age of investors explain about 58% variance in loss aversion, and the squared multiple correlation for endowment effect is 0.446, which shows that almost 44% variation in endowment effect is explained by age and gender of investors in the present model.

Figure 2: Structural model
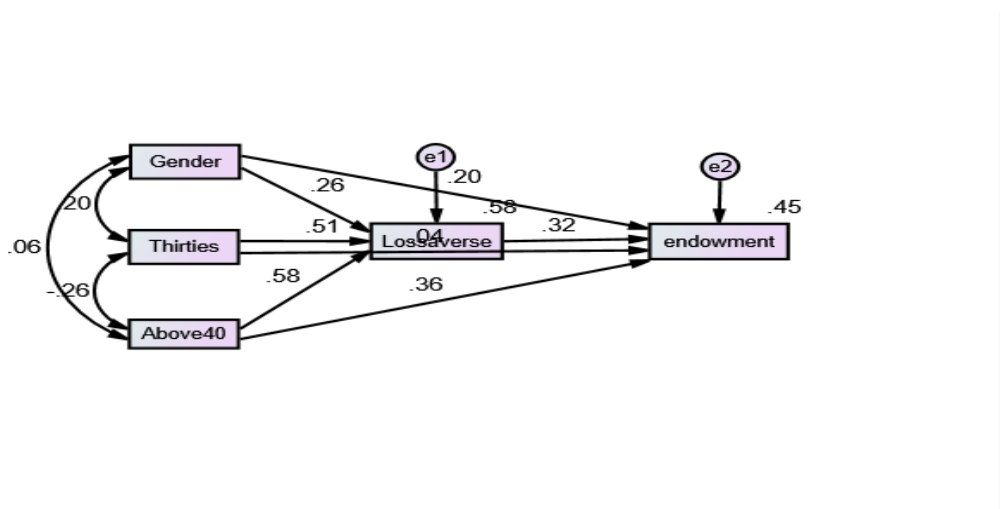
The study assessed the impact of demographic variables (age and gender) on loss aversion and the endowment effect of individual investors in India. The impact of gender on loss aversion is significant (H1: b = 0.248, p < 0.05) and a positive coefficient implies that females have higher levels of loss aversion as compared to males. Age also has a significant impact on the loss aversion of investors (H2a: b = 0.480, p < 0.05; H2b: b = 0.584, p < 0.05), the positive coefficient here indicates that investors in the reference category (18-30 age group) have lower levels of loss aversion as compared to investors in their thirties or above 40 years of age, hence, data confirms H1 and H2 in the model. The impact of gender and age on the endowment effect without the presence of loss aversion i.e. H3 and H4 were also supported by the results obtained from the data analysis (H3: b = 0.274, p < 0.05; H4a: b = 0.190, p < 0.05; H4b: b = 0.518, p < 0.05). Loss aversion also has a significant impact on the endowment effect supporting H5 in the structural model (H5: b = 0.258, p < 0.05).

Table 2 shows the impact of independent variables on dependent variables without mediating variables.

Hypothesized relationship	Standardized Estimates	T-Values	P-values	Decision
Endowment effect <- Gender	0.274	3.632	< 0.05	Supported
Endowment effect <- Thirties	0.190	2.500	< 0.05	Supported
Endowment Effect <- Above 40	0.518	6.039	< 0.05	Supported

Table 3 shows the direct effect of independent variables on dependent variables in the presence of mediating variable

Hypothesized relationship	Standardized Estimates	T-Values	P-values	Decision
Loss aversion <- Gender	0.248	3.719	< 0.05	Supported
Loss aversion <- Thirties	0.480	6.758	< 0.05	Supported
Loss aversion <- Above 40	0.548	7.757	< 0.05	Supported
Endowment effect <- Gender	0.209	2.679	< 0.05	Supported
Endowment effect <- Thirties	0.067	0.735	0.462	Not Supported
Endowment Effect <- Above 40	0.377	3.751	< 0.05	Supported
Endowment effect <- Loss aversion	0.258	2.216	< 0.05	Supported
R- square				
Loss aversion	**0.583**			
Endowment effect	**0.446**			
CMIN/df = 2.321, GFI = 0.914, TLI = 0.911, CFI = 0.940, SRMR = 0.053, RMSEA= 0.093				

Mediation Analysis

The study assessed the mediating role of loss aversion on the relationship between gender and age of investors on the endowment effect. The study revealed the indirect impact of gender on the endowment effect was not significant (b = 0.109, P = 0.073) hence, H6 was not supported. However, the direct effect of gender on the endowment effect in the presence of mediating variable was found to be significant (b = 0.355, P = 0.001). Therefore, we can say that loss aversion does not play a mediating role between gender and the endowment effect. Also, the age of investors does not have an impact on the endowment effect via loss aversion as the indirect effect was not significant for both categories of age (thirties group: b = 0.203, p = 0.095; above 40 age group: b = 0.311, p = 0.097) hence, H7 was also supported, therefore, we conclude that loss aversion does not play a mediating role between age and endowment effect of investors. The mediation analysis summary is presented in Table – 3

Table 4: Direct and indirect effects of independent variables on dependent variables

Relationship	Direct Effect	Indirect effect	Confidence Interval		P - Value	Conclusion
			Upper	Lower		
Gender-> LA -> EE	0.355 (.001)	0.109	0.285	-0.012	0.073	No Mediation
Thirties -> LA -> EE	0.110 (.364)	0.203	0.425	-0.044	0.095	No Mediation
Above40 - > LA -> EE	0.831 (.001)	0.311	0.651	-0.074	0.097	No Mediation

5. Discussion and conclusions

In this article, we set out to deepen our understanding of whether the age and gender of investors affect their levels of the endowment effect and loss aversion among Indian individual investors. The results of the study indicate that females are more loss averse

and the levels of their endowment effects are also higher as compared to male investors in the Indian context. These findings are consistent with the findings of Prasad and Mohta, (2012);Arora and Kumari, (2015); and Dommer and Swaminathan, (2013). Data also revealed that the age of investors is positively and significantly related to the levels of loss aversion and the endowment effect among Indian investors these findings are also consistent with the findings of Hjorth and Fosgerau, (2011);Harbaugh et.al (2001); and Bao and Gang, (2016). With regard to the mediating role of loss aversion between demographics and the endowment effect evidence from the study suggest that loss aversion does not mediate the relationship between age, gender, and endowment effect of Indian retail investors this gives us a chance to think about the alternative explanations to the endowment effect apart from loss aversion. Various pieces of research in the past suggest that the endowment effect can no longer solely be attributed to a traditional loss aversion account. There are new alternative theories such as Motivated Taste Change Theory, Cognitive Perspective and Query Theory, Attachment aversion to bad deals, and Neuroeconomics that suggest evolutionary, strategic, and more basic cognitive origins of the endowment effect. (Isoni et.al, 2011; Ericson and Fuster, 2014; Morewedge and Giblin, 2015) The study has many implications for financial advisors and financial educators. Financial advisors can make themselves more effective by understanding their client's investment decision-making process. Moreover, since demographic variables are closely related to behavioral biases different strategies can be formulated to serve the needs of the client. Future researchers should undertake additional studies with a larger sample size to increase the generalizability of results. Researchers may also include new variables which can influence investment decisions and can extend this study in different contexts.

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