Availability Bias of Urban and Rural Investors: Relationship Study of the Gujarat State of India

Abhishek Sachan[1], Pawan Kumar Chugan[2],*

[1]Quantitative Analyst, Quantile Analytics Co., Indore, Madhya Pradesh, India
[2]Professor (Retd.), Institute of Management, Nirma University (IMNU), Visiting Professor IMNU and AIIM,
Ahmedabad & PDPU, Gandhinagar, Gujarat and Fellow ISTD, India
*Corresponding author: pkchugan@gmail.com

Abstract Biases challenge ability of investors to make rational decisions. The knowledge of concentration of biases based on demographics of investors may have implications for wealth managers and policy makers. This study focuses on relationship between availability bias and urban-rural residence of individual investors. The study reports that place of residence significantly relates to availability bias. A person belonging to rural areas has higher probability to be susceptible to availability bias. Indian rural population has lower per capita incomes and has lower cushion to absorb financial losses, in such a scenario, cost of being biased is very high, for which this study implicates the requirement of credible and sufficient information sources to reduce the availability bias of investors. Wealth managers, hence, are required to develop different communication skills for rural clients in order to build consensus for optimum investment decisions.

Keywords: *availability bias, behavioural finance, behavioural economics, cognitive bias, investor demographics, investor education, investor information, individual investors*

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1. Introduction

The real world of investors is not the world of rational economic men, real investors are irrational and have biased investment decisions. In order to achieve optimum investments for clients and individuals participating in economy, portfolio managers and policy makers cannot ignore the role of investor's biases, their patterns, their causes and their remedies. An attempt has been made in paper to explore about the availability bias and its relationship with residence of investor. The idea of this relationship is dervied from review of various demographic relationships with investor behavior.

1.1. Availability Bias

While trying to make a decision - individuals use availability heuristic where individuals visualize many events and examples at the back of their heads to facilitate the decision-making process. The example or event which strikes most prominently is given higher than reasonable weightage in decision making process, hence causing a bias. A quick example could be assigning more weightage of risk to the job of a police officer in comparison to a logger, just because a person may have prominent remembrance of risks associated with police, however, statistically loggers have higher death rates. "Availability

heuristic argues that people sometimes judge the frequency of events in the world by the ease with which examples come to mind. When forced to make a decision, we rely on what is brought to mind quickly, which is a useful mental shortcut. However, this undermines our ability to accurately judge frequency and magnitude [1]".

1.2. Behavioral Bias V/s Availability Bias

Behavioral biases cause an investor to deviate from rational behavior, behavioral biases of investors are categorized in cognitive errors and emotional biases. Cognitive errors indicate towards information processing limitations of individuals which cause biased decisions, emotional biases on the other hand stem from unexplainable premises originating from feelings instead of facts. Availability bias addresses information processing limitations of individuals by assigning unreasonably higher weights to scenarios which they recall easily.

Year 2008 was eventful for the world of finance, when there were talks [2] about the failures of smartest investors of wall streets in year 2008, they were supposed to be rational, and part of a perfect system; their vulnerability questions the abilities of normal less-than-logical people, to produce optimum investments. Adding another perspective [3], decisions involve memory, and memory of an event for an individual may be different than its actual experience, hence leading to incorrect decisions. Paradox of choice is also discussed and an example is cited [4] that

how increased number of options causes choice paralysis; US data suggests that for every ten additional mutual funds offered by the employer, 2% reduction in retirement fund participation was observed. The reason for reduced participation is increased expectations due to increased options. Comparing this research with the assumptions of standard finance, which suggest return expectations rely simply on risk, it may be believed that the standard world of finance is not well aligned with the real world of finance.

Some of studies on behavioral economics provide new and interesting insights to the process of decision making, as reported [5] that an individual perceives a certain deal benefitting if it is presented along with a little inferior option. While studying saving tendencies of investors, it was reported [6] that by allowing people to interact with age-progressed renderings of their future selves using immersive virtual reality hardware and interactive decision aids, they allocated more resources for their future selves.

Another interesting study [7] suggests that the languages that grammatically associate the future and the present, foster future-oriented behavior, speakers of such languages: save more, retire with more wealth. This holds both across countries and within countries when comparing demographically similar native households.

Addressing behavioral aspects of individuals leads to policy level improvements [8], if governments align to behavior of individuals then their policies will be highly effective, he also makes a strong point that solutions need not be complex and costly, as is the case with traditional economics and finance. It was reported [9] that electricity and fuel consumption can be reduced when peer comparison feedback is provided to consumers. Benefits of understanding behavioral paradigm are many and are being reported from various fields. Evidences suggest that behavioral finance and economics are making their way into the world of real and working solutions, and a problem related to participants of economy should not be analyzed simply by traditional views of standard finance. In order to improve efficiency of solutions and measures, the behavioral view is of high importance.

1.3. Objective of Study

This research is a quest to understand investment behavior of rural participants of economy, where information availability is low for financial decision making. The study explores the basic idea that the rural investors because of having lesser information related to risk and return prospects of investments would take investment decision based upon availability heuristics; this will cause rural investors to demonstrate higher availability bias than urban investors.

2. Literature Review

Although there is a reasonable face validity to the idea of higher availability bias in rural areas, this idea also gains strength from literature supporting connect between investor demographics and investment decisions, ability to assess risk and investment styles. The below tabular review presents evidences of relation between investors investment styles and demographics:

Table 1. Review of Behavioral Biases and Demographics

Author and Year	Related Conclusions of Study	Sample Size	Statistical tools and Methodology	Country
Cohn, Lewellen, Lease, & Schlarbaum (1975)	"A strong pattern of decreasing relative risk aversion; as wealth increases, a higher proportion of the total is committed by the individual involved to risky assets". [10]	588	Descriptive Statistics and Regression analysis.	US
Lewellen, Lease, & Schlarbaum (1977)	"Strong indications of systematic changes in investment objectives and risk preferences across age brackets, income classes." [11]	972	Cross Classification contingency table, preliminary regression.	US
Warren William & Stevens Robert (1990)	"Investor in the same age or income categories may have totally different investment needs, which can be fully analyzed with the help of lifestyle analysis. Not only lifestyle dimension helps differentiate active/passive investor behavior and light and heavy investors in particular investment." [12]	152	Multiple Discriminant Analysis.	US
Gupta, Jain, & Kulshreshtha (1994)	Share ownership is largely an Urban phenomenon. [13]	165819 shareholders and 63157 debenture holders.	Descriptive Statistics.	India
Koreto (2001)	"Religious values affect investing; religious investors may be more self-disciplined." [14]	1000	Descriptive Statistics.	US
Rajarajan (2002 and 2003)	"Demographic profile is strongly associated with risk bearing capacity [15]. Locus of Control had positive relationship with expected rate of return, risk bearing capacity, loss avoidance behavior and inverse relationship with the portfolio choice." [16]	405	Chi Square Test and Multiple regression analysis.	India
Kiran & Rao (2005)	"The Factor Analysis of the questionnaire data shows that the investors can be classified into four factors i.e., the Professional Investor who wants more returns and takes calculated risk, the Ambitious Investor who likes higher returns even if it meant taking higher risks, the Cautious Investor who looks for regular income rather than capital gains and finally the over-cautious Investor who looks to protect his capital more than anything else, even if it means lower returns." [17]	96	Factor Analysis and Multiple Logistic Regression.	India

Author and Year	Related Conclusions of Study	Sample Size	Statistical tools and Methodology	Country
Ng & Wu (2006)	"Wealthier individuals prefer highly liquid and volatile stocks, and stocks with greater state-ownership, growth potential, and good past return performance. However, less wealthy individuals prefer stocks with high beta, high liquidity, poor past return performance, and especially stocks with low price, and small capitalization." [18]	64.2 million trades executed by about 6.8 million Chinese investors.	Regression Analysis.	China
Hira & Loibl (2008)	"Women prefer less risk than men when it comes to money matters. A majority of the women reviewed performance of their investments over the previous twelve months, Women are less confident than men about their financial futures, Women find investing more stressful and less exciting than men." [19]	911	Descriptive Statistics.	US
Feng & Seasholes (2008)	"Males and females exhibit similar behavior along three key dimensions: (1) The degree of home bias is similar across genders - both men and women over-weight local stocks by 9% relative to the market portfolio. (2) The portfolio performances of males and females are not statistically different. (3) Men appear to trade more intensively than women before controlling for factors such as number of stocks held and number of trading rights. After controlling for these factors, there is no significant difference in trading intensity." [20]	51,218	Survival Analysis.	China
Mittal & Vyas (2009)	"Income was found to be a significant factor impacting the overconfidence level, tendency to overreact and loss/regret avoidance, but has no significant effect on self-attribution bias, framing effect, and tendency to use purchase price as reference point." [21]	428	ANOVA	India
Mittal (2010)	"The study indicates that business class investors are more prone to cognitive biases while salaried class investors are more prone to biases which are outgrowth of framing effect and prospects theory." [22]	428	ANOVA	India
Hood, Nofsinger, & Varma (2014)	"Women, younger investors and democrats, tilt their portfolios towards stocks with progressive labor policies for women and minorities, while gays/lesbians are less likely to own sin stocks. Christians invest less in stocks with progressive labor policies for gays and lesbians, Catholics are more likely while Mormons are less likely to own a sin stock, social characteristics that are important to one investor may not be important to another socially conscious investor." [23]	1,700	Linear Regression with clustered standard error approach	US
Sahi, Arora, & Dhameja (2013)	"Factors such as age, marital status, occupation, work-experience, income, saving rate, nature of household accommodation and investment tenure, impact the individual's financial satisfaction levels." [24]	374	ANOVA	India
Sireesha & Laxmi (2013)	"Gender, age and friends are mostly influencing the investment decisions of the respondents." [25]	165	Regression Analysis.	India
Sachan (2015)	"Marital status, gender, age, education, profession and residence (rural/urban) were reported to have statistically significant relationship with emotional biases." [26]	321	Chi-Square Analysis.	India

The above literature review provides strong basis for relationship between behavioral biases and demographics of investor. With this review, a gap can be reported related to relationships that have high face validity. One of such relationship can be between availability bias among rural investors. Availability bias is related to judgemental heuristics which an investor applies to investment decisions based upon instances which occur to his mind with ease and with little or no effort [1]. Indian investors have been reported to follow variety of psychological heuristics and biases related to investing [27]. Availability bias relates to heuristic approach of investing and information processing style of an investor, this indicates to a research gap, related to behaviour of urban and rural investors, as rural investors have very low availability of detailed and in-depth financial news as compared to their urban counterparts; not only they are low on financial information, they are generally low on all other kinds of information; This may force them, or habituate them to take decisions based on easily recallable

information, which may not have sound basis. This study extends this hypothesis and tests this relationship using non-parametric Chi square distribution.

3. Research Methodology

Study based on primary data was conducted with the individual investors of Gujarat state of India. A questionnaire was prepared with some basic identifiers like name and contact number, and the place of residence of the investor. A questionnaire was produced using items measuring availability bias [28] was pretested in three rounds, with respondents of different backgrounds but matching with target population and then necessary modifications were made. The items were translated to local language as per the suggestion of the pretesting participant, and translational validity was obtained in addition to test retest reliability. The test-retest correlation of items related to availability bias was 0.78.

4. Sampling

The population targeted for the study was of individual investors who had invested in securities or in alternative investments modes of their own accounts. State-wide respondents of Gujarat were targeted. Gujarat has five geographical regions: North, Central, South, Kutch and Saurashtra. All regions were targeted to have proportionate representation in the final study; however, an exploratory study was also conducted at Ahmedabad. Respondents were identified based on the definition of individual investors reported above, given the broad definition of investors, following scenarios were possible:

Investors investing their capital in their own accounts - salaried or self-employed individuals

Investors investing other's capital in their own accounts - Dependents like parents, housewife, etc

Investors investing other's capitals in others accounts - Financial Advisors.

The similarity which was targeted from respondents was the ability of respondents to take investment decision for an available sum of capital. A filter question was provided in questionnaire to know whether the respondent had the authority to take investment decisions. The frequency of investment decisions is of lesser importance (as due to some biases/experiences an individual may avoid frequent buying/selling) but the ability to take investment decision is of importance in the study. (E.g.: Housewives, family members managing wealth on behalf of elders, etc.)

Looking at the broad definition of individual investors, the study considered population to be infinite and satisfying below conditions to maintain randomness in sample selection [29]:

o Each element selected comes from the defined population
o Each element is selected independently of other

The challenge was to obtain responses of rural and female investors, although census may suggest cluster composition of nearly 50% females, but there may not be that many female investors. Through exploratory study it was also established that females having source of income may not be taking investment decisions on the capital earned by them. Hence, a low participation of females was reflected in the overall study.

5. Rural Urban Classification of Sampling Units

The areas falling under Municipal Corporations were identified as urban, and areas falling under "Gram Panchayats", or Municipalities were identified as rural. Respondents were asked to make a judgement for their residence on three grounds:

1. Where they spent most of their lives, such that local culture and system has had effect on their personality,
2. Where they created most of their wealth, and
3. When there was a tie, -I investors having exposure to mutual funds and derivatives were categorized as urban investors

Despite the cost of obtaining responses from rural investors was high, the best efforts were made and nearly 30% (156) respondents were from rural background. The sample size was calculated assuming that population has maximum possible variance, hence p= 0.5 in the below formula:

$$n = (Z_{\alpha/2})^2\, p(1-p)/E^2$$

Where,

$Z_{\alpha/2}$ is value of standard normal distribution for α significance level
P is the population proportion
E is the desired margin of error

By using E = 5% and α= 5% (standard practice), the highest value of 'n' was found out to be 384. This study covers the required sample size adequately with the sample size being 516.

6. Hypothesis

Place of residence was recorded on nominal scale, and investor's availability bias was recorded on a binary scale, where 1 represented presence of bias and 0 represented absence. Given that observations were on nominal and ordinal scale, non-parametric methods were used to test the relationship. Both the variables were cross tabulated and test of independence using Chi-square distribution was performed.

The null hypothesis to be tested was:

H_0: There is no significant association between availability bias and place of residence of investor.

And alternate hypothesis was:

H_a: There is significant association between availability bias and place of residence of investor.

7. Results and Discussion

Availability bias suggests that investors take decisions based on information which is easily recallable, although the information may be wrong. The null hypothesis of no association between residence and availability bias was rejected with $p=$ 0.039, where about 83.9% of rural investors demonstrated the presence of availability bias, while 75.8% of urban investors had the availability bias. The results suggest that availability bias has strong presence among Indian investors, but it is stronger in rural regions. Wealth managers can take cues from this result that, 78% of their prospective or current investors have availability bias and may require respective counselling and correction efforts. Table 2 contains the detailed analysis.

Table 2. Relationship between Availability Bias and Residence

		Availability Bias		Total	% with Bias
		0	1		
Residence	Rural	25	131	156	83.9
	Urban	89	271	360	75.8
Total		112	404	516	

	Value	df	p-value
Pearson Chi-Square	4.245	1	.039
Likelihood Ratio	4.430	1	.035

8. Policy Implications of the Study

Studies have indicated about challenging state of financial literacy and cognitive abilities of Indian farmers [30]. Given the low income of rural residents, and given the substantial income gap, rural investors on an average have thinner cushion to absorb financial and other risks related to investments [31]. In such a scenario, a biased decision may turn out to be fatal for rural investors.

This study, hence, recommends appropriate government institutions to increase availability of financial information in rural areas with priority. Additional information will not only facilitate decision making but will also help in reducing availability bias, and as suggested [32] could lead the investors to strategize differently. Governments and regulatory bodies can promote examples related to correct financial decisions for multiple financial conditions and investor profiles, this shall help availability heuristics of investors to recall correct examples, and improve upon their decision making.

9. Limitations of the Study

This study must be generalized appropriately. Many researchers have raised doubts on the ability of interviews to capture behavioral aspects due to issues related to social desirability, interpretation of responses, etc. but our methods originate from the accepted and standard procedures of behavioral studies. Even though research is carried out scientifically, one cannot avoid errors related to measurement of behavioral attributes. The errors due to sources not known to academic and research fraternity must be factored in before making any recommendations based on this study.

10. Scope of Further Research

The study also opens future research avenues related to solutions for reducing bias of investors. Those solutions may be introduced as relevant improvements in the ongoing educational and financial inclusion programs of concerned government bodies.

It would be interesting to extend this research to study rural consumer behavior. Also, it could be studied that what package of information can be propagated for rural investors, in such a way that the information package acquires the available information set of investors, so that they improve upon their investment decisions even though they are biased.

11. Conclusion

Availability bias suggests that investors give more weight to the information which is easily recallable, although the information may be wrong, or the weight assigned to the information may be incorrect. The results suggest that availability bias has strong presence among Indian investors, but it is stronger in rural regions. Wealth managers may take cues from this study that about 78% of

their prospective or current investors have availability bias and may require respective counselling and correction efforts. Government agencies may also use this input for investor awareness, by making available events and examples to facilitate correct decision making by investors. Regulatory authorities may on the other hand monitor and check that information which may distort availability heuristics of investors.

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