

The Impact of Behavioral Finance on Lebanese Investors' Decision Making

Pr.Latifa Ghalayini¹, Sally Ziad Alkees^{1,2}

¹ Faculty of Economic sciences and Business Administration, Lebanese University, Beirut, Lebanon

² Doctoral School of Law, Political sciences and Business administration, Lebanese University, Beirut, Lebanon



Abstract – The inability of the traditional expected utility maximization of rational investors (within the efficient markets Framework) to explain many empirical patterns; was the main stimulus beyond the appearance for another track to resolve and analyze this inconsistency; through combining behavioral and cognitive psychological theory together where Behavioral Finance is known mainly as “Subjective judgement” where ideas and decisions cannot be transmitted to other’s knowledge, as each one acts from his own point of interest; unlike conventional finance paradigm. Therefore, this paper seeks to determine the main behavioral errors or biases that are faced mainly by the Lebanese individual investor during decision making process. Results obtained by analyzing 211 questionnaires through SPSS software to develop a Structural equation model. Findings prove that Over Confidence and regret aversion are the main behavioral biases that control the Lebanese individual investors’ decision making.

Keywords – Behavioral Biases, Heuristics, Prospect Theory, Structural Equation Model.

I. LITERATURE REVIEW

“Behavioral Finance is becoming an integral part of decision-making process as it heavily influences the investors’ performance” (Banerjee, 2011). Parikh has recalled also in 2011 that “An understanding of how our emotions result in irrational behavior is indispensable for any investor”. As a result in-depth education regarding the different biases that may be faced is very needed to all investors, in order to know how to face them whenever they have been surprised with, to obtain a more effective and efficient work. Furthermore; investors usually do lots of mistakes without recognizing, a simple example regarding what is mentioned previously is when investors holds on for a long period of time while facing big losses, not to regret or waiting for any happy news that would reverse all the situation. Parikh (2011) had discovered a global key that helps investors to take the right decision which lies in combining both sound intellect with emotional discipline, and so they get the aimed rational behavior.

Numerous Theoretical and Experimental works for the two important psychologists Daniel Kahneman and Amos Tversky (1970), who shared their psychological literature that served as the main foundation; giving life to a new paradigm in 1980s that was well known by Behavioral Finance. The latter “studies how people actually behave in a financial setting. Specifically; it is the study of how psychology affects financial decisions, corporations, and the financial markets”. (Nofsinger, 2001)

Bernstein (1998) stated that the “Decision making evidence reveals repeated patterns of irrationality, inconsistency, and incompetence when human beings are faced with decisions and choices during uncertainty”.

From 1969 till 1972, Slovic was interested in studying all the people that deal with stock markets from investors till brokers...moving to Tversky and Kahneman (1974) that talked in details about heuristics and biases that may happen whenever faced with decision making under uncertainty, in addition to that, Researches continued to discover the prospect theory in 1979, that lead them at the end to earn Nobel prizes in 2002 regarding economics.

Nevertheless; to be more specific Kahneman has been interested in studying the human judgment decision making under uncertainty, whereas Smith has been more interested in studying alternative market mechanism through experimental research. At that era, it was the first time where a psychologist was awarded the Nobel Prize and has been involved in playing the main role in convincing and confirming the mainstream financial economists that investors may behave in an irrational way.

Subsequently, academics have started to discover certain foggy cases and behaviors where traditional theories didn't find clear explanations for them. The main and most popular examples are The January effect, where it was noticed that the stocks in financial market increases in this month without a scientific reason; similarly for the day of the week where stock prices increase by Friday afternoon to decrease on Monday morning (Rozeff and Kinney, 1976).

According to Sinha (2012), a new crisis appeared in the form of Sovereign debt which was originated in Europe and then spread all over the world, hitting all the financial markets consequently. "Volatility" has been the most famous word that controlled the prices of the financial markets starting since 2008; horrible movements have taken place in prices due to the extreme fear and anticipation of the investors, which turned the life for all kind of investors upside down. As a result; markets started getting back day after day, thus understanding the irrationality in the behavior of the investors has been clearer and the reasons beyond it has become well known. Nevertheless, the main problem lies in various numbers of psychological biases that are affecting the behavior of all the investors leading them to irrational thinking during taking their decisions.

During 2008, lot of studies toward this issue started to appear, starting from the business students (Chira, Adams and Thornton) that had the curiosity to know how certain biases would influence them; as there were about 68 surveys that were distributed to undergraduate and graduate business students at Jacksonville University- USA. Thus, they obtained that students are less subjected to behave in overconfident and excessive Optimism, but on the contrary objectivity has controlled their decisions.

At the Nairobi Stock Exchange; Waweru, Munyoki, and Uliana (2008) have studied how institutional investors have been affected by certain behavioral factors such as Herding, representativeness, overconfidence, Anchoring, loss aversion and availability bias during taking their investment decisions using a Questionnaire.

Thus the main key to investors' success is to recognize their emotional indiscipline and face it, so that it will not be repeated. That's to say Warren Buffet make it clearer by saying "It is only when you combine sound intellect with emotional discipline that you get rational behavior" (Parikh, 2011).

Therefore the main difference between these two paradigms is that "Under the paradigm of traditional financial economics, decision-makers are rational and utility maximizing; In contrast, cognitive psychology suggests that human decision processes are subject to several cognitive illusions, those caused by heuristic decision" (Nofsinger, 2008).

II. IRRATIONALITY IN DECISION MAKING

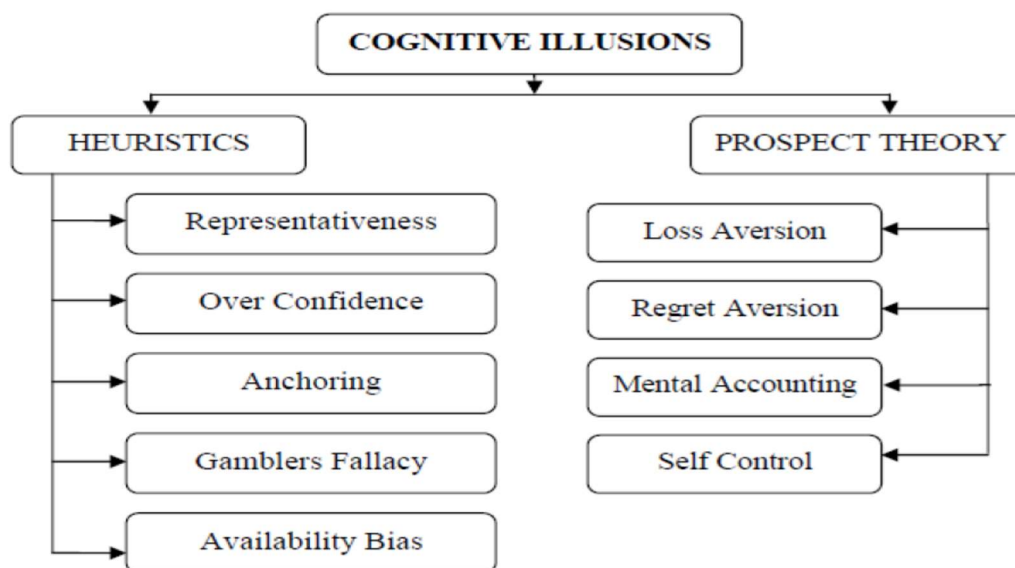
"Behavioral Finance is becoming an integral part of decision-making process because it heavily influences the investors' performance", Banerjee(2011) in addition to that as Parikh recalled in 2011 : "An understanding of how our emotions result in irrational behavior is indispensable for any investor", for that the in-depth education regarding the different biases that may be faced is very needed to all of the investors in order to know how to face them whenever they have been surprised with them in order for their work to be more effective and efficient; because unfortunately investors are doing a lot of mistakes without recognizing , a simple example regarding what we have talked about is when investors holds on too long while facing big losses and this is just not to regret or waiting for any happy news ,but according to Parikh (2011) ,he had discovered a global key that helps in the success of investors which is facing all of his emotional in disciplines in order not to repeat them again and to be more clearer he had tell that "It is only when you combine sound intellect with emotional discipline that you get rational behavior" .

III. BEHAVIORAL BIASES

Whenever we say traditional finance, rationality will shine directly in front of our eyes, but on the other side modern finance nowadays lies on certain considerations that an investor believes that they are true, but usually they are considered inconsistent, to

be more clearer irrational thinking is going to control an investor's mind and this may lead him to decide based on certain cognitive illusions which can be divided mainly into two groups and they are presented in the figure below:

Figure 1: Classification of Cognitive illusions



Source: Kahneman and Tversky (1974)

- **Heuristic decision process**

Under the heuristic decision process falls certain biases where investor may face; which leads him to certain irrational behaviors and this is due to the use of certain methods like the rule of thumb and trial and error which have been used in uncertain environments and during taking complex

3.1-Heuristics

investors gather a lot of information before taking decision, but unconsciously his emotions will play an important role in the decision that he's going to take so far, to a certain extent it may be good for him to involve his feelings but most of the times it may leads him to big fail and losses. Here are some of these heuristic decisions

3.1.1-Representativeness

Debont (1998) have found that representativeness falls under taking certain stereotyping decisions which is based on his past and previous experience and we can't deny that his decision is targeted and biased with respect to his previous success or failure and by how much he earns or loose however, he also take his decision affected by the majority of his peers.

3.1.2-Anchoring

kahneman and Tversky(1974),tell that certain investors take their decision based on certain estimations and calculations from previous studies and they just make certain adjustments for them...but this idea didn't enter into the mind of kahneman and Tversky as they have tell that "adjustments are typically insufficient" for an investor to take an accurate decision.

3.1.3-Over Confidence

Over confidence is a positive trait for a certain extent, but unfortunately, investors sometimes overestimate their knowledge and skills, as they enter into decisions which may be a result of over optimism due to their past success, mostly this kind of bias leads

to enter in more and more trading activities but in reality it may lead to severe losses because the outcome will not be as they have expected before.

3.1.4-Herding

Usually herding exists when most of the investors follows what the majority tell and take the same decision as they have took and not as what he believe thinking that the majority will be true; but if the contrast has happened a, huge losses are going to happen specially to investors that relies mostly on how others think and follow them and they keep on holding even a loose stock waiting for good news always because they can't compose their own view regarding the issue.

3.1.5-Cognitive Dissonance Bias

Pompian (2006) said that investors could be exposed to this bias when they tend usually to take decisions that doesn't fit their own beliefs, so they avoid every new information that would stand in front of what they have been thinking all along their investment life; for that they usually tend to justify their decisions even though they realize that they are wrong in reality.

3.1.6-Gambler's Fallacy

Investor's may face this bias especially when they have been winning for several times after each other, as a consequence they tend to take a reversal trajectory path most of the times ,but this thing will usually leads them to face several losses so far

3.1.7-Availability Bias

Investors are exposed to this bias usually when they take wrong decisions but it was in reality based on information which was available in front of them just, and this may lead to losses.

3.2-Prospect theory

Daniel Kahneman and Amos Tversky (1979) have worked hard in order to discover this kind of theories which helps in modifying how investors avoid the previous theory and violate it ;this theory has born when they discover that investors tend to prefer certain outcome on other and this is what has happened when they were been asked to choose between certain lottery events, but it's not the case in the utility theory where individuals must not have the tendency to choose differently between the cases.

On the other side, there were also another views toward prospect theory where the "value function" stands also for prospect theory but differs from utility function where in the expected utility theory, since it was due to a certain reference point and this latter was determined by the subjectivity of different individuals; as we can tell that in the graph of the utility theory below, we can notice that all the point are concaved upward that's to say with respect to different wealth levels they are not changed, but the case differs when we are talking on the value function, because there is a certain reference point that we cannot ignore, to be more clearer we can notice that on the graph of this theory we notice that there are certain points which are below the reference point thus these investors are risk

seekers and the function is upward sloping, whereas when they are above investors are risk averse and its downward sloping; note that the reference point may differ from one individual to another as each one can determine it as a comparison point.

As a result, under this theory there were a lot of state of minds that may impact the decision that an investor can take so far, from the most important biases that an individual investor could take were:

3.2.1 .Loss aversion

When face with this bias investors could be either risk seekers when they feel themselves faced with losses, and risk averse when faced with gain under the prospect theory.

3.2.2- Regret Aversion

This kind of bias could be face when we notice that there are certain investors which have the tendency to hold on even a lose stock for a long period of time just not to regret later on if they have sold it, especially when they were capturing it and working on it for a long period of time so that latter will have always the fear of regretting whenever he sell it.

3.2.3 Mental accounting

When we hear in Mental accounting we link it directly to the mind; that's to say an investor's mind is able to divide and organize each event that may happen with, and usually certain investors are able to forget their losses directly whenever faced with profits in the next round ; this bias mainly holds three kinds of operations; the first one refers to know how the outcomes were received and perceived, the second one refers to matching each activity that was done with its account, and the third and last operation refers to the frequency of evaluating accounts.

3.2.4 Self-control

According to Thaler and shefrin, each investor is exposed to certain temptations that could lead him to over consume and fall in big losses so far; for that they must find different ways in order to separate and organize their outcomes on one side and their expenses on the other side, thus they must be self-controlled in order to avoid exaggerations in consumptions.

Nevertheless,below is a table that summarizes the main biases faced when taking decision unconsciously, in addition to their effects and consequences.

Table 38: Biases, effects on Investors and Consequences

NAME OF BIAS	KEY EFFECTS ON INVESTOR	CONSEQUENCE
Overconfidence	Too many trades, too much risk, failure to diversify	Pay too much brokerage and taxes, chance of high losses
Representativeness	Tendency to associate new event to a known event and make investments based on it	Purchasing overpriced stocks
Herding	Lack of individuality in decision making	Bubbles, and bubble bursts
Anchoring	Tendency to consider logically irrelevant price level as important in the process of decision making	Missed investment opportunities, or bad entry timing into the market
Cognitive Dissonance	Ignore new information that contradicts known beliefs and decisions	Reduced ability to make rational and fair investment decisions
Regret Aversion	Selling winners too soon, holding losers too long	Reduced returns
Gamblers' Fallacy	Taking too much risk after a lucky win	Chance of high losses
Mental Accounting	Low or no diversification	Irrational and negative effects on returns
Hindsight	The tendency to feel that a past event was obvious when it really was not, at onset	Incorrect oversimplification of decision making

After observing different kinds of biases that are faced when making a decision it is insured that, it's not necessary for an investor to face all of the above biases, but on the contrary according to the situation faced and to the different variables that play an important role where bias could be committed ; for example the experienced investor is likely to face less herding or representativeness bias from that unexperienced one, but on the other hand experienced one's are more likely to face overconfidence or gambler's fallacy; for that investors must find different ways to minimize from their exposure to these biases in order to improve their decision making process and avoid losses , especially when being faced by various choices where uncertainty controls all over.

However, with respect to investment decision making and Within psychological and sociological domains a new concept has appeared lately in finance which is linked to the "taste of investors" as Prodhon (1995) stated that the 'unethical practices in the finance domain have become a common occurrence in the late twentieth century, reflecting the spirit of the times where Many private investors as well as institutional investors want to counteract such developments and seek to combine their financial and social interests all together" as a result Social responsibility investments has started to take place.

IV. THE IMPACT OF BEHAVIORAL FINANCE ON LEBANESE INDIVIDUAL INVESTORS EMPIRICALLY.

Any research study is not considered appreciated until it meets the Quality requirements

that a business research should acquire. Furthermore a Structural model is built in the following, to verify the relationship between the different psychological errors and their impact on Lebanese decision making.

4.1-Structural Econometric model methodology

Structural econometric models are portrayed as models that join both Statistical models together with explicit economic models. In different terms, behavioral sciences regularly tend toward utilizing the structural modeling for being a general Statistical modeling tool. Basically, this model utilizes both Statistical and economical presumptions, where amounts from the joint thickness of financial information can be effortlessly perceived. Furthermore, the methodology of the Structural equation model clarifies the convenience of any financial suppositions by drawing causal monetary derivations from the dispersion of monetary information which is known as economic data.

Various multivariate techniques, as (discriminant and factor analysis...) are mainly used in the Structural equation modelling, which makes these models a proper base for Statistical analysis. Normally, every one of these models is unique by itself; and characterizes a special economic phenomenon. Meanwhile, the main targeted Objectives for the agents as utility maximization, loss aversion profit maximization... and from the other side the different constraints like budget constraints, constraints on information processing and imperfect markets... are considered as the major elements which constitute a structural model.

However; other elements have also contributed in being as the main components in this interactions' model between agents; and can be indicated as the heterogeneity concept which defines how preferences, constraints and beliefs differ across agents; second the Agents' reactions regarding uncertainty and their beliefs about uncertain consequences and finally, the above listed elements specification concerning the invariance properties towards economic environment changes definitely.

Furthermore, Structural model is mainly divided into two main forms which fall under Statistic structure that explains why data cannot be perfectly explained by the economic theory; thus it's usually added by a modeler and affects the researcher's choice that's to say by used quantities and estimation method. From the other side, Economic Structure that includes deterministic data, which allows the researcher to understand the impact of any economic behavior on a specific economic conditions and outcomes.

However, three main assumptions (Statistic and economic) must be taken into account by the modeler himself while implementing various choices; first of all assumptions that reflects mainly the economic reality ,then different assumptions related to data generation which would perfectly explain and rationalize it and finally the different assumptions that are linked to estimation simplification. Nevertheless, lots of modelers argue that it would be fine to modify the structural model in order to facilitate the estimation process; others say that it should just follow a certain specified stochastic economic model.

4.1.1-Advantages of constructing a structural model

The main reason that lies behind constructing a structural model refers to the ability of predicting alternative results, by assuming certain changes in the model itself (Counterfactual testing); which would help the researcher in making all the assumptions and checking them in order to anticipate all kinds of economic phenomena and behaviors. Second, regarding the unobserved parameters

that lies under “behavioral parameters” and being estimated by structural models; Moving to the third reason that leads to compare between numerous ways of combining both stochastic and economic primitives in order to discover the combination that fits better the collected data.

4.2- Data Source and collection

The main goal of our research was targeting mainly individual investors, since they usually tend to have limited knowledge about the application of certain behavioral theories in decision-making, as a result they will be more exposed to a lot of psychological errors. Moreover, we have created this sample profile basing it on different judgment criteria: age of the respondent, years of investment experience, most preferable market, range of prices preferred mostly.

The study targets individual investor (males and females) aging 18 and above since usually individual investors could be either young which are still fresh, and mature one's that have experience in this domain ;to know the difference between them and how would years of experience affect the individual's investor decision taken and would he be exposed to biases as the young ones that have no experience. 211 complete questionnaires from various individual investor were received.

4.3- Questionnaire Structure

The survey was divided into three parts: first demographics questions, second Investment basics and other questions that indicates us about different biases that might be faced by different individual investors in Lebanon.

4.4-Statistical Methods

Data analysis for this study was applied, descriptive statistics (frequency, means, and standard deviations) to all the questions and cross-tabulation to gain an understanding of the nature of responses. However, inferential statistics like correlation, factor analysis and regression analysis was used to understand the relationship between variables. The results were examined and analyzed by using SPSS software.

4.5-Hypotheses under study

H1: All types of Lebanese individual investors are affected by certain behavioral biases during decision taking.

H2: most of the Lebanese investors tend to be more overconfident and excessive optimism while taking decisions regarding their portfolios .

H3: Most of the investors tend to face representativeness bias.

H4: Most of the investors tends to face Herding bias during decision making.

H5: Lebanese Investors usually feel in fear to get out from their investment even if they knew that it's a losing one.

H6:All types of individual investors tend to face Mental accounting bias.

H7:Most individual investors tends to face cognitive Dissonance bias.

4.6- Quality Criteria

Studying the basics criteria which support the keys of a scientific research is essential. Reliability and Validity are studied, in addition to other tools; to investigate the real impact of behavioral finance on Lebanese individual investors. However “Validity is expressed through measurement validity, internal validity, external validity and ecological validity whereas reliability is assessed through the stability, internal reliability and inter-observer consistency.

4.6.1-Reliability Test results**Table 1:Reliability Statistics-BF**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.604	.688	25

The reliability test presented in table 30, shows 68% reliability which is an acceptable percentage and considered reliable in most of the cases but on the other side it can also be considered as Questionable to certain extent, and this is very normal in our case, since usually cronbach's alpha measures the internal consistency of the scale, and it's used mostly when our study contains a questionnaire which is based on likert scale questions and the researcher wishes to test if the scale used is reliable or not. However, in our study there various response format such as the five-likert scale and the three-likert scale and others were closed-ended ...so it's very normal for the Cronbach alpha to be questionable in our case due to the absence of unification of the likert scale so as all over it.

4.7-Statistical sample discription

A description of the sample's characteristics in terms of age, educational level, investment basics and other questions related to certain behavioral biases that might be used, will be presented hereafter. (Source: The author)

4.9-Frequencies**Table 2: Gender-BF**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid male	117	55.5	55.5	55.5
Female	94	44.5	44.5	100.0
Total	211	100.0	100.0	

According to the test results presented in table 31; 55.5% of the respondents lies under Male (individual investor), whereas 44.5% of female individual investors.

Table 3:Age category-BF

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 22-29	18	8.5	8.5	8.5
30-39	69	32.7	32.7	41.2
>40	123	58.3	58.8	100.0
Total	211	100.0	100.0	

Regarding table 32, the respondents' age varied from 22 years to more than 40 years old, with 8.5% between 22-29 years, 41.2% between 30-39, and 58.8% 40 years old and above.

Table 4: Education-BF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	high school	26	12.3	12.3	12.3
	University	185	87.7	87.7	100.0
	Total	211	100.0	100.0	

As for the respondents' educational level obtained in table 33, we have got 87.7% with a University level.

Table 5: Historical record-BF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	199	94.3	94.3	94.3
	No	2	.9	.9	95.3
	neutral	10	4.7	4.7	100.0
	Total	211	100.0	100.0	

94.3% of the investors presented in Table 34, thinks that they can sometimes predict the Future value of their stock after a detailed analysis for the past performance.

Table 6: Years of Investment-BF

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	2	.9	.9	.9
3	2	.9	.9	1.9
4	6	2.8	2.8	4.7
5	11	5.2	5.2	10.0
6	21	10.0	10.0	19.9
7	19	9.0	9.0	28.9
8	15	7.1	7.1	36.0
9	14	6.6	6.6	42.7
10	6	2.8	2.8	45.5
11	4	1.9	1.9	47.4
12	10	4.7	4.7	52.1
13	10	4.7	4.7	56.9
14	12	5.7	5.7	62.6
15	13	6.2	6.2	68.7
16	14	6.6	6.6	75.4
17	13	6.2	6.2	81.5
18	6	2.8	2.8	84.4
19	5	2.4	2.4	86.7
20	3	1.4	1.4	88.2
21	5	2.4	2.4	90.5
22	5	2.4	2.4	92.9
23	1	.5	.5	93.4
25	5	2.4	2.4	95.7
26	1	.5	.5	96.2
27	3	1.4	1.4	97.6
28	2	.9	.9	98.6
30	2	.9	.9	99.5
31	1	.5	.5	100.0
Total	211	100.0	100.0	

According to the results that have been expressed in table 35, it can be notice that 9% have been investing for 7 years, 6.6% for 16 years, and 2.4% for 25 years; in addition to others that are presented in the table above.

Table 7: Regret Aversion-BF

	Frequency	Percent	Valid Percent	Cumulative Percent
no	132	62.6	62.6	62.6
yes	69	32.7	32.7	95.3
never	10	4.7	4.7	100.0
Total	211	100.0	100.0	

Regarding the question of disinvesting when being faced with a continual loss, 62.6% which are the majority do so in order to avoid more and more losses.

Table 8: Holding on waiting for good news-BF

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	100	47.4	47.4	47.4
No	27	12.8	12.8	60.2
sometimes	84	39.8	39.8	100.0
Total	211	100.0	100.0	

The results in table 37 shows that 47.4% of the investors hold on their investment; expecting always new and favorable information release in order to preserve their decision.

Table 9: Past performance effect-BF

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	159	75.4	75.4	75.4
No	6	2.8	2.8	78.2
Sometimes	46	21.8	21.8	100.0
Total	211	100.0	100.0	

75.4% of the investors presented in Table 38, thinks that they can sometimes predict the future value of their stock after a detailed analysis for the past performance.

Table 10: Mental Accounting-BF

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	100	47.4	47.4	47.4
No	54	25.6	25.6	73.0
sometimes	57	27.0	27.0	100.0
Total	211	100.0	100.0	

The majority of the investors (47.4%) given in table 39 are able to forget their losses after being faced by win opportunities after it.

Table 11: Criticism effect-BF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Self-Confident	157	74.4	74.4	74.4
	change your decision	33	15.6	15.6	90.0
	Disappointed	21	10.0	10.0	100.0
	Total	211	100.0	100.0	

According to the results presented in table 40 ; 15.6% are going to change their decision if they have been criticized for investing in a losing stock or for selling off a winning stock that doesn't fit their beliefs, whereas 74.4% will keep it and be self-confident and just 10% will be disappointed.

V. RESULT ANALYSES

A detailed analyses regarding the results obtained from different Tests applied on the gathered Data is obtained and analyzed.

5.1-Correlations

When studying the correlation between the dependent variable (Portfolio investment Decision) and the independent variables (Over confidence, Representativeness, Herding, Anchoring, Regret aversion, mental accounting, and Cognitive dissonance...) the results were as follow:

Over confidence & excessive optimism was highly correlated with the individual's decision taking at the level of 0.01, the Pearson correlation between them came out to be equal to 0.673 significant at 0.01 (positive correlation).

Representativeness has a negative correlation with the dependent factor which is decision taken (-0.348) and was significant at 0.01, thus they work in an opposite direction that's to say representativeness doesn't play a big role during taking a decision in reverse with overconfidence.

The correlation between herding bias and the decision taken was also positive but not too high (0.229) and significant at 0.05, thus we can tell that an individual investor takes his decision following expert's opinions, even if he had different valuation he based his decision on his opinion.

Regret Aversion and the dependent factor had also a positive correlation (0.438) and its Significant at 0.01, as most of the individual investors hold on their investments expecting always new and favorable information, thus regret aversion bias affects to certain extent individual's decision making.

The correlation between mental accounting and individual's decision making was positively correlated (0.350) and significant at 0.01, thus we can tell that individual's ability to forget directly the loss after a win and being able to divide his mind, one from the biases that affects the decision's taken.

Finally, with respect to cognitive dissonance bias we notice that it affects also in a positive way an individual's decision taken (0.476) which is significant at 0.01, thus it can be said that individual investor will directly change his decision regarding his portfolio, whenever he had been criticized for investing in a losing stock that contradicts his beliefs.

5.2- Factor Analysis

Before proceeding in this step, it is essential to know that factor analyses is mainly based on "Correlations" above; for that a multicollinearity and singularity check is done, In order to know which biases must be included and which should be excluded.

The test done has showed that, there was no factors that are highly correlated or perfectly correlated; thus we can tell that all as an initial look all factors can be included except for representativeness and herding that were poorly correlated with the dependent factor.

In this research, factor analysis is used in order to explore the data for patterns, confirm the hypotheses understudy, and reduce the many variables to a more manageable number; in addition for knowing to which extent the variables grouped are related or express the Determinant.

Table 12: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.869
Bartlett's Test of Sphericity	Approx. Chi-Square	696.467
	Df	28
	Sig.	.000

Usually the KMO and Bartlett's test varies between 0 and 1, Kaiser(1974) said that values above 0.5 must be accepted in order for factor analysis to yield reliable factors; and values below 0.5 leads the researcher to either collect more data or to rethink more in the variables included.

In the following case, as presented in the table above Kaiser's value is 0.869 which is considered "Great" Hutcheson and Sofroniou(1999), Therefore we should be very confident that the factor analyses is very appropriate for our data.

Moving to Bartlett's which test the null hypothesis, and it is recommended for this test to be significant (<0.05), For the collected data regarding this part; it appears that Bartlett's test is highly significant ($p<0.001$), thus we can tell that factor analyses is very appropriate for our study.

5.3- Regression (Model Building)

As a second step a linear regression was done between the independent factors (over Confidence, representativeness, Herding, Anchoring, Regret aversion, Mental accounting, cognitive Dissonance) and the dependent factor (investment's decision taking).

Table 13: Model Summary-BF

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.721 ^a	.521	.490	.71418944	2.092

a. Predictors: (Constant), Cognitive Dissonance, Herding, excessive optimism and over confidence, Mental accounting, regret aversion, representativeness b. Dependent Variable: decision taken

Table 14: ANOVA ^b-BF

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52.054	6	8.676	17.009	.000 ^a
	Residual	47.946	94	.510		
	Total	100.000	211			

a. Predictors: (Constant), Cognitive Dissonance, Herding, excessive optimism and over confidence, Mental accounting, regret aversion, representativeness

b. Dependent Variable: Decision taken

As shown in table 42; the adjusted R square is =to .490 which means that 49% of the total variance in supporting the individual's portfolio investment decision making is explained. Moreover having the F significant at less than 0.05 suggests a linear relationship among the variables and indicates the overall significant of the model used.

Table 15: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.759	.071		.000	1.000
Over confidence	.556	.082	.556	6.737	.000
Herding	-.091	.092	-.091	-.995	.322
Representativeness	-.037	.105	-.037	-.353	.725
Regret aversion	.201	.100	.201	2.007	.048
Gambler's fallacy	.232	.066	.117	-2.013	.053
Mental accounting	.079	.086	.079	.927	.356

a. Dependent Variable: decision taken

Based on the factor analysis results presented in table 44; a negative Relationship between two biases is noticed, except for four which are mentioned below but we have made the regression in order to confirm our results. Beta expresses the relative importance of each independent variable in standardized terms. First, we find that excessive optimism, regret aversion, cognitive dissonance, and mental accounting are Significant with the dependent factor (portfolio investment decision making) ...The Coefficient table helps conclude the equation, it is found that over confidence and excessive optimism has higher impact than that of regret aversion which has a higher impact than cognitive dissonance which in turn higher than mental accounting but if we take a look at the T test column, we notice that just excessive optimism and regret aversion are significant while the others are not (beta=0.556, and beta=0.201) respectively for overconfidence and regret aversion.

5.4-Model estimation

Thus from all the proceeding; the relationship between the independent variables and the dependent variable which is individual's portfolio investment decision is addressed upon:

$$Y = 2.749 + 0.566 \text{Overconf} + 0.201 \text{RegretAversion}$$

This result indicates that two main independent variables (Over confidence/excessive Optimism and regret Aversion) affect significantly the Lebanese individual investors' decision making (Dependent variable); while all the other biases are not significant so far. "Over Confidence/excessive optimism" bias affects mostly the Lebanese individual investors' decision making, where responses of investors in the blind survey shows that the majority around 73% of the respondents anticipate correctly the future after making a detailed analysis; in addition for 47% with almost a right decision making record.

Various questions were asked, but the main ones that constitute this variable (Over Confidence/Excessive optimism bias) were:

My investment decision has proven to be almost right; 47.5% answered by yes ;furthermore predicting the future correctly after making a detailed analysis for the historical record,73.3% answered by yes. Nevertheless, Questions related to "Regret Aversion bias" were extracted mainly from questions whether Lebanese investors end up sticking with a losing stock/project (wrong investment decision) for too long, expecting always new and favorable news; 47.4% of the respondents were yes that's to say the majority of Lebanese investors' fears from giving up and regretting especially when they have been working on the project for too long.

5.5-Summary for Findings

- ✓ Hypothesis one (H1) was accepted, as we have seen that all types of individual investors are exposed to behavioral biases during taking decisions regarding their portfolios ,where we have noticed while studying whether individual investor have heard about “behavioral finance”, we have noticed that the majority of them which record 35.6% has a poor knowledge toward this concept.
- ✓ Hypothesis two(H2) was also accepted, as we have found that 47.5% have been taking so far the right decision in their decisions and 73.3% build their portfolios according to its past performance, in addition to that this factor was the main contributor that has appeared when building our model .
- ✓ Hypothesis three (H3) regarding facing herding bias was rejected .
- ✓ Hypothesis four(H4) that was related for facing Regret aversion had highly appeared in Lebanon, thus it was strongly accepted.
- ✓ Regarding hypothesis five(H5) and six(H6),that talks about mental accounting bias and Cognitive Dissonance tends to be not significant($P>0.005$)so these two hypotheses were rejected and excluded.
- ✓ A multicollinearity and singularity check was performed to see if any of the biases had very high or very low correlations with the dependent factor(Decision taken). The initial test suggested that there are no multicollinearity or singularity issues for our data.
- ✓ Overconfidence(excessive optimism) and regret aversion appeared to be as the main biases that individual investors in Lebanon are mostly exposed to according to the gathered data and results accomplished .

$$Y=2.749+0.566\text{Overconf}+0.201\text{RegretAversion}.$$

VI. CONCLUSION

In this context it seems very urgent and important to understand the irrational behavior of the individual investors that deserves to gain wider importance. Nevertheless “Behavioral finance - a relatively new field that came into relevance in the 1980s – studies the effect of psychology on financial decision-making; to be more clearer it tends to study how such individual investors that have limited knowledge tend to interpret and analyze signals that are send from the release of new information and depend on it in order to obtain the most adequate decisions under uncertainty.

However, it appears that “The science does not try to label traditional financial theories as obsolete, but seeks to supplement the theories by relaxing on its assumptions on rationality and taking into consideration the premise that human behavior can be understood better if the effects of cognitive and psychological biases could be studied in context where decisions are made” (kahneman,1970).

However, it has been very interesting to check whether individual investors think rationally or they are driven by various emotions that complicate their way of thinking and lead them to take wrong decisions ; as a result our thesis has been seeking deeply behind the Lebanese individual investors mainly in order to check whether they are affected by such biases or they think rationally. For that we tended to take seven main behavioral biases which were: “Overconfidence, Representativeness, Herding, Anchoring, Regret Aversion, Mental Accounting and Hindsight Bias” to see if these Lebanese investors are faced with during their decision taken; through the help of a Structured questionnaire; nevertheless 211 respondents were obtained.

Various tests were done and through a structural modelling for Lebanese individual investors; it seems relevant to say that these investors are facing these biases during their decision taken in different ways but factor analyses technique have helped us to reduce these variables ,thus we have noticed that a Lebanese individual investor faces mainly “over confidence& excessive optimism’ and “Regret Aversion” during their decision taking and from these our model had been constructed.

Furthermore, it is highly recommended to study the individual decision making process from both sides combined together; that's to say from the conventional point of view and behavioral finance side to see the impact of them combined together; in addition for investigating which one has a higher effect on Lebanese individual investors so far.

REFERENCES

- [1] **Al-Tamimi, H. A. H.** (2005). Factors Influencing Individual Investors Behaviour: An Empirical study of the UAE Financial Markets, IBRC Athens, Aryan Hellas Limited. Available at: www.aryanhellas.com/107/ha.pdf
- [2] **Azam, M., & Kumar, D.** (2011). Factors Influencing the Individual Investor and Stock Price Variation: Evidence from Karachi Stock Exchange. *Australian Journal of Basic and Applied Sciences*, 5(12): 3040-3043, 2011.
- [3] **Barberis, Nicholas. and Thaler, Richard.** 2003. A Survey of Behavioral Finance. *Handbook of the Economics of Finance*. Elsevier Science B.V: 1054-1056
- [4] **Blumberg, B., Cooper, D. R. and Schindler, P. S.** (2005). *Business Research Methods*. Spain: McGraw Hill Education (UK).
- [5] **Bryman, A. and Bell, E** (2011). *Business Research Methods*, Third edition, Oxford University Press.
- [6] **Chandra, Abhijeet.** 2008. *Decision Making in the Stock Market: Incorporating Psychology with Finance*. New Delhi.
- [7] **Chen, Gong-meng, Kenneth Kim, John Nofsinger, and Oliver Rui.** 2007. Trading performance, disposition effect, overconfidence, representativeness bias, and experience of emerging market investors. *Journal of Behavioral Decision Making*.
- [8] **Daniel, Kent D., David Hirshleifer, and Avanidhar Subrahmanyam.** 1998. Investor psychology and security market under- and over-reactions. *Journal of Finance* 53:6, 1839–86.
- [9] **Kahneman D and Tversky A** (1973), "Availability: A Heuristic for Judging Frequency and Probability", *Cognitive Psychology*, No. 5, pp. 207-232.
- [10] **Kahneman D and Tversky A** (1979), "Prospect Theory : An Analysis of Decision Under Risk", *Econometrica*, Vol. 47, pp. 263-291. 0:4, 425–51.
- [11] **Tversky, A. and Kahneman, D.** (1974). 'Judgement under uncertainty: Heuristics and biases', *Science* (185):1124-1131.