

Behavioral Finance: A Study of Literature

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Abstract. The basic objective of this paper is to introduce the definition of different psychological biases that included in behavioural finance, find out the reasons why people behave differently in real life financial market from what is understood by traditional finance, elaborate the meaning of apply behavioural finance in people's daily life, explain the importance of behavioural finance to modern economics. According to different experiments in previous research papers include mug test, caterpillar effect and several famous tests to explain four different categories of behavioural finance which are framing effect, loss aversion, endowment effect and herd instinct. In each categories described the definition, to connect the behaviour with human habits and give the examples to explain the reason of this psychological biases relate to the real financial market. This paper also includes the analysis of the impact of behavioural finance on human decision-making process and the future prospects of behavioural finance to explain and excavate the future research direction, identify drawbacks in current research content.

Keywords: Behavior finance; framing effect; loss aversion; endowment effect; herd instinct.

1. Introduction

Behavioral finance is a newly developed area, it is a blend of psychology, sociology and anthropology based on economics that makes economics closer to people's real lives [1]. The beginning of the behavioural finance was in 18th century when Adam Smith first mentioned about how people's emotion will affect their financial behaviour. Finance trading is human behaviour over time, people start to connect psychology with financial. The traditional finance assume that people is rational and market is efficient but, in the reality, people is not rational enough, their decision will be easily affected by the emotion they have. When people under pressure or and stressful they cannot calm down to make decisions correctly, so behavioural finance basically is to combine finance and psychology together to analysis people's decision-making process. Behavioural finance is a really important part in modern economics, it can give the explanation that why people make decisions different from what traditional economics belief, it is more in line with reality than traditional economics. Applicate behavioural finance in people's daily life will really help people to deal with their decisions, knowing behavioural finance well can make people avoid to involve their emotions in to decision making. Behavioural finance is very important to modern finance that it is not just theory, it can be apply in the real world. Human nature is complicated that cannot be predict or follow by theories, the decision making by people can be affected by other people and that is what traditional theories cannot explain. There are lots of categories of behavioural finance, framing effect, loss aversion, endowment effect and herd instinct will be discussed and analysis about how it will affect the decision making by people in this paper.

2. Framing Effect

Framing effect has been considered as one of the largest biases in decision making, that even if people face the same situation, just a change in description can lead to a change in people's decision. Here is the experiment carried out at a university about framing effect, imagine that there is a pandemic in America will cause 600 people deaths, now there are two options let people to choose to deal with the pandemic. The students have been divided into two groups, for group 1 they have been given option A and option B, option A is to make sure 200 people has been healed, option B is that there is 1/3 of chance that all of the 600 people healed but 2/3 of chance none of the 600 people healed.

For group 2 they have been given option C and option D in the same scenario of group 1, option C is that there will be 400 people dead because of the pandemic, option D is that there will be 1/3 of chance that nobody dead but 2/3 of chance all of the 600 people dead. It seems that there are no differences between option A and B or option C and D essentially only the way of description changes, but the result is interesting that 72% of students in group 1 choose option A and 28% of them choose option B, 22% of students in group 2 choose option C and 78% of them choose option D [2]. So, from the result it can be conclude as when people making decisions, they always want to choose the option that seems to be positive as in this experiment most of students choose to let people healed but not dead, in group 1 students cannot take the risk of have 2/3 chance that all 600 people dead so they want to choose the 'saver' situation that is at least they healed 200 people. But in group 2 in this situation 400 people dead is a big amount of loss that they cannot afford so they want to take the risk to let all 600 people healed, even though the chance to get all people healed is just 1/3 they think it is better than have 100% to loss 400 people. So, make this example more correlate to finance that people are more willing to gain revenue than losses, in this experiment people get healed is revenue and people dead is losses, the students in group 1 basically face the revenue generation, they are not willing to take risk because if they take risk, they will have the chance to get nothing so they choose the save option that make them at least have some revenue. But when people face losses like the students in group 2, they are more willing to take risk than they will be definite loss things although the proportion of not loss is much lower than loss everything, people still want to try to avoid losses. It is also having some related with loss aversion which will be display in the next part of the essay. There is another example which is more related to finance, in this example there are also two scenarios to face and both of them have two options for students to choose, so option A in scenario 1 is to gain \$240 for sure, the option B is have 25% to gain \$1000 but have 75% chance to get no money. Option C of scenario 2 is to loss \$750 for sure and option D is have 75% chance to loss \$1000 but have 25% to loss nothing. The result shows that in scenario 1 84% of students choose option A and 16% of them choose option B, in scenario 2 13% of students choose option C and 87% of them choose option D [2]. That is basically the same result with the previous experiment that indicated people are willing to take the sure gain than the probabilistic gain, although win \$1000 is much more than get \$250. But for the losses people are willing to take risk than sure losses, although they have big chance to loss \$1000 than sure losses of \$750, they still want to try for small chance of loss nothing.

3. Loss Aversion

Loss aversion is one of a most important content of behavioural finance, it has defined as that people are more willing to avoid losses but not gain the same amount of revenue. Loss aversion is a behaviour that has arisen in human evolution, in the Stone Age because of the uncertainty of environment, human at that time always experience the food shortage that makes them valuing food extraordinarily that if there is no food they cannot survive and produce offspring. They need to catch up every chance to evolution, but in that time human only can get food from hunting other animals they have not learned to grow plants yet. Hunting is an event that cause much energy and time, the chance of success hunting was low. So, at that time human have this behaviour that they prefer to keep what they have got in last hunting but do not want to loss what they have got and take risks to do another hunting [3]. So, in nowadays people still have this feeling when they loss something they will feel upset because people used to put effort on getting this thing, but now it is loss so they need to double the effort to get the things back or get a new one to replace it, then people will feel that the effort that they put on to get the thing back is useless because they used to have that thing before. There is an example that made by Samuelson (1963) to prove loss aversion is exist, he offered his colleague a deal about to flip a coin that if the result is head, then he can get \$200 but if the result is tail then he will loss \$100. It is known that the proportion of flip a coin to get the result of head and tail is basically the same, so that means he get 50% chance to get \$200 and 50% chance to loss \$100. His colleague refuse to take this bet and he said that he was more willing to take this bet for 100 times

[4]. According to what Samuelson's colleague said, the reason that he wants to take 100 times of this bet is that according to the chance he can get the result of head which means to get \$200 is the same with to get the result of tail which means loss \$100, so after 100 times of this bet he will earn approximately \$5000 according to the probability, but for one time of the bet he needs to take the risk of loss \$100 so that is not what people want, because of the loss aversion people are trying to avoid losses that they did not want to take the risk, even they can obtain more money with the same probability. The most typical way of loss aversion influence people's decision is the discount event of companies, black Friday is a typical example of using the loss aversion of consumers to advertising and let people buy things. In black Friday the sellers will give the highest discount among the whole year that makes consumers think if they miss this chance they need to wait until next year, that means if the consumers miss this chance, they will feel they cost more money on the same stuff even for its original price. So, the consumers try to avoid the loss that makes them buy things as much as they can, that is the reason why this kind of festival sellers can sell more products and earn more profit even the unit price of each product has been reduced.

4. Endowment Effect

Endowment effect is quite like the loss aversion, that basically it is the part of loss aversion but it is important enough to be a single topic apart from loss aversion. Endowment effect was first mentioned by Richard Thaler in the early 1960s, explain that the item that owned by people has more value than the same item that have not owned by people before. That means people always pay more attention to what they have but not what they do not have [5]. People are lazy, they prefer to stay in current situation with the things they are familiar but not trying to seek for change. So, endowment effect means that people are satisfied and being confident about what they have and when people try to make a decision there always have a risk of failure but people are not willing to take risk [6]. Given a simple example of endowment effect that you have a ticket of a football match, before the match begins a stranger wants to buy the ticket of you, you will expect he will give a price far exceeding the market price, but if the identity swapping, you are the buyer of the ticket that wants to buy a ticket from a stranger, you will wish that you can get the ticket with the market price. Here is a famous example of endowment effect, there are 44 university students participate in this experiment, they first been divided into two groups, half of them had been given a token and an instruction manual about how much money is the token, they pretend to be the sellers of a token that they can set a sell price from the range of \$0 to \$8.75 of the token by themselves then the buyer can decide to use the same money to buy the token. In this market there is no endowment effect appears because the token has the fixed value, so the sell price of the token needs to be the same value of the token present, if not the buyers will not buy it because the token itself has no practical use to the buyers. As the result of the first induced-value market, the actual trading volume is basically the same with the predicted trading volume. In the second market the professor gave students a mug which has the market price of \$6 as a substitute of the token and doing the same thing with the previous experiment, the sellers set a lowest price that they can accept to sell the mug and the buyer gives a highest price that they can accept to buy the mug. The result of this experiment is quite different with the previous induced-value market which students trade with token. After 4 trials of trading the ratio between actual trading volume and predicted trading volume was only 0.2, the median of the seller price is \$5.25 that is 2 times more than the median of the buyer price which is around \$2.5. The third market is to give the sellers a box of ballpoint pens that have the market price of \$3.98, go through the same process with the previous experiments, the result shows that after 4 trials of trading the ratio between actual trading volume and predicted trading volume is only 0.41, the median of the seller price is around \$2 that is also more than 2 times of the median price of buyer price which is around \$0.75 [7]. The reasons of the ratio between actual trading volume and predicted trading volume of second and third market much lower than the first market is that the token is not a thing that can be used by the buyers, it is just present amount of money so there is no endowment effect in the first market, people trading with

token according the amount of money it represents. But in the second and third market the mugs and pens is what people can use in their real life that is the actual stuff and do not have fixed value, even there is the market value of the stuff but people still think the market value cannot represent the real value of the stuff. So, endowment effect appears in the second and third market to influence the seller price and buyer price that forms the differences and make the trading volume much less than the first market. There is another experiment which proof endowment effect exist further, in the experiment there are 3 groups of university students, the 76 participants in group1 have been given a coffee mug to each of them and ask them if they want to exchange to 400 grams of chocolate with almost the same market value of the coffee mug. The 87 participants in group 2 have been given the 400 grams of chocolate to each of them and ask them if they want to exchange to the coffee mug. The 55 participants in group 3 are free to choose whether to get a coffee mug or 400 grams of chocolate. The result shows that in group 3 there are 56% of students choose to get a coffee mug and 44% of students choose to get 400 grams of chocolate, that means when students have nothing the differences of preference to coffee mug and chocolate is not obvious. But the result of other 2 groups are interesting, there are only 11% of students choose to use coffee mug to exchange with chocolate in group 1 and 10% of students choose to use chocolate to exchange with coffee mug [8]. That is a clear display of endowment effect, most of people think what they have is better than what others have, so they do not want to exchange with others. Back to how endowment effect influence to the decision-making process because of endowment effect appear people are not willing to sell their stuff when it is not necessary so they give their stuff a higher psychological price point that is also one of the reasons make the market not efficiency enough. Endowment effect usually appear in the stock market when share prices start to fall, people seem to be reluctant to sell their shares, they are more willing to take the risk of a further fall and wish the share price will go up again. That is a typical influence by endowment effect that people think the stock they get is better than the other and do not want to sell the stock.

5. Herd Instinct

Herd instinct was used to describe animal behaviour at first, like shoal, flock, cattle and other fauna formed by other herd animals. Through human evolution herd instinct is now used to describe the human behaviour that means when people making a choice in several different options, they always choose the option that most of people choose, they believe that the option chosen by majority must be better than the other options even they are not aware of other options. The same thing happened in decision making, if the leader of a group of people have made the decision, most of people in the group will just blind followers of the leader they are not using their mind to think of the decision actually. Herd instinct is almost similar as the caterpillar effect which discovered by Fabre, he did an experiment about whether the caterpillars will follow the leader blindly around the edge of a circular flowerpot and eventually forming a closed loop. He discovered that because of the habitat of the caterpillars they are willing to follow the silk ribbon which left by the one in front of it, even he put the food next to the closed loop formed by the caterpillars, none of them can get rid of their habitat and turn to eat the food, the caterpillars were just crawl endlessly on the edge of the flower pot until they were exhausted [9]. So, from this example it can be seen that although human beings are much cleverer than caterpillars and do not have the habitat to follow the silk ribbon, they have the commonalities to unconditionally obey and trust their leaders. Herd instinct can also change people's mind without thinking, give an example that happens in everyone's life, there are two restaurants next to each other and a group of strangers are going to decide to eat in which one of them. Everyone have different opinion about which restaurants they should go but if one of them is sure about which restaurant to go to and walk toward to that restaurant the others will habitually follow his decision but ignore their own ideas [10]. Herd instinct also occurs when pedestrians waiting for a red light, there is no clear rules and punishment in most of the countries about pedestrians running red lights, everyone know it is an incorrect behaviour. Bur if a group of strangers are waiting the red light, when

one of them runs the red light the other will follow him even they know it is wrong and they break the rule but the herd instinct makes them feel they did the right thing at that time. When people buying products online, they first look at others comments then choose the best user rating among the same category products, it is same in stock market. The individual investors always looking at what shares does other investors invest, then choose the same share to invest. When the share price fall down they all scramble to sell of their shares but no one wants to take over that cause them to lose money and herd instinct is one of the difficult psychological aspects of investors to overcome.

6. Conclusion

Behavioral finance is more and more important in nowadays financial market. Lots of human behaviours in financial market can be explained by behavioural finance. The future of behavioural finance is long that there are still lots of behaviours of human in financial market can not be explain also human nature is complex, everyone has different thoughts even behavioural finance cannot be apply for everyone in the world, it is just majority of people fit in but not all. People used to ask to their friends about the experiment of framing effect he has the different choices with the majority of people, maybe it is because the thoughts of themselves or maybe it is because the era changes lead to a change in people's perspective and thus influences their decisions. So, what behavioural finance need to develop in future is that the theories of behavioural finance should change over time not limited in the traditional psychological bias, it should include more researches about human emotions like fear, anger, upset, joy because this kind of emotions can certainly influence people's decision.

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